DECEMBER, 1930

COTTON

THE TEXTILE MANUFACTURING JOURNAL

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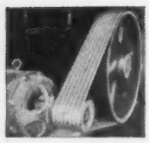

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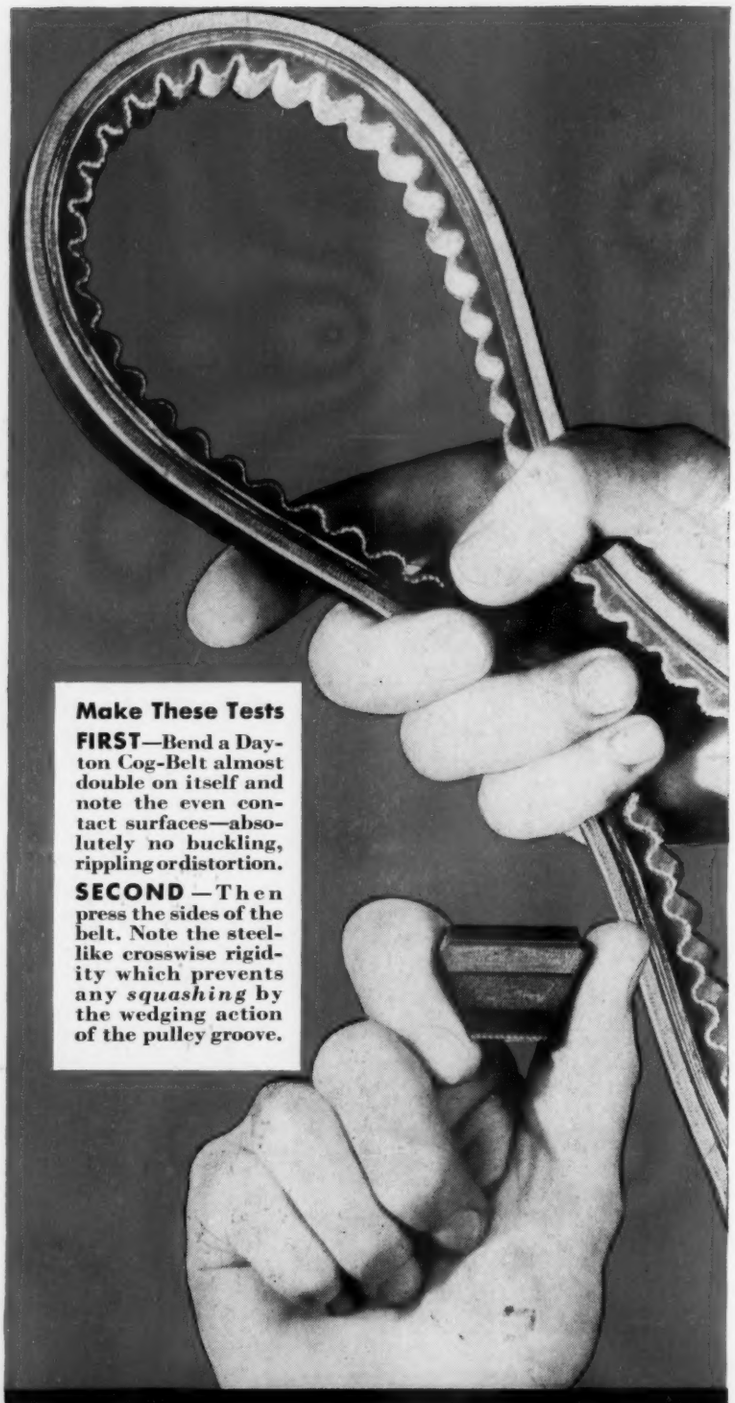

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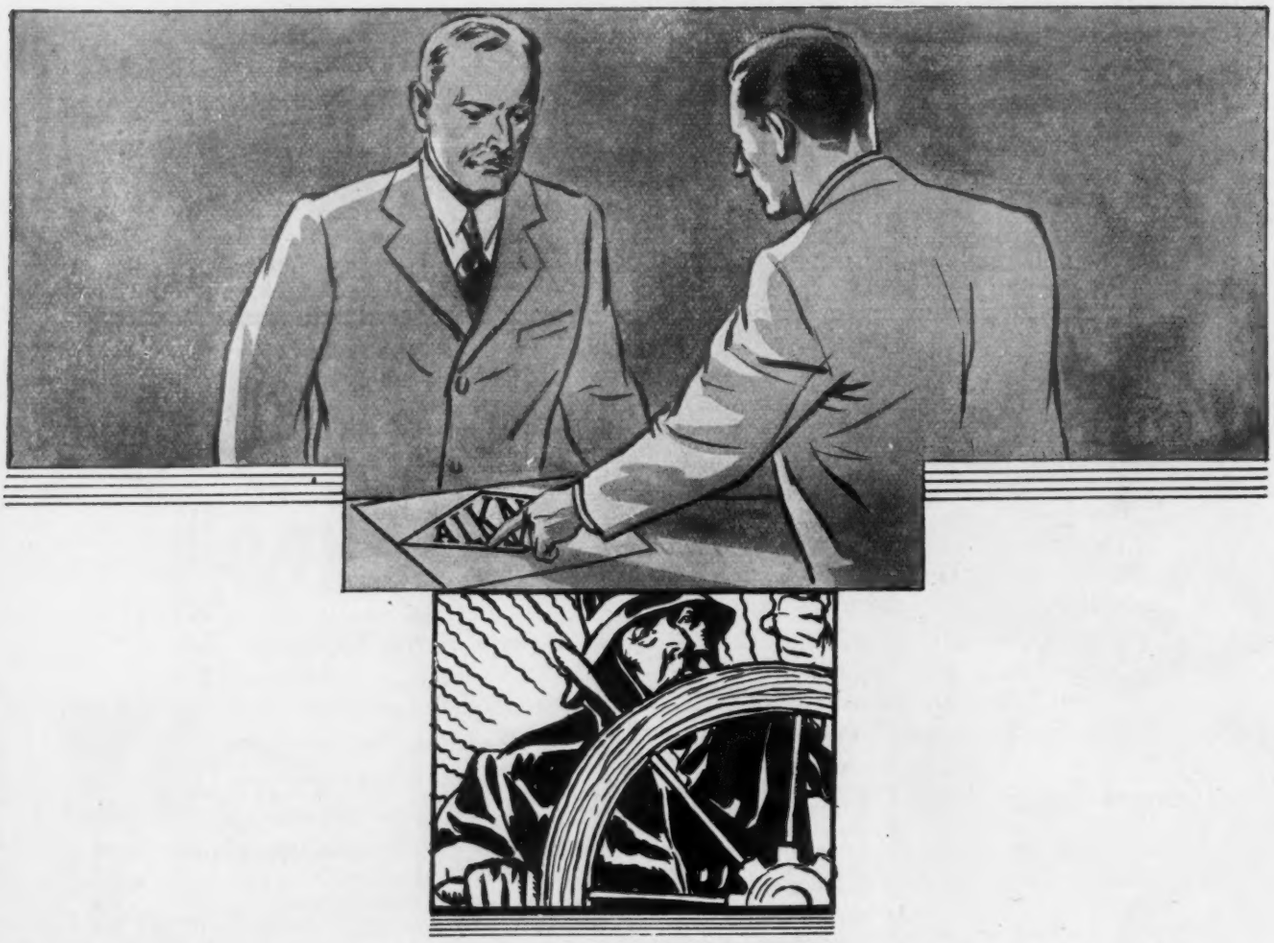

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COTTON

Vol. 95 December, 1930 No. 2

Textile Research Moves Forward

RESEARCH in the textile industry—scientific and practical—received its most important impetus during the past month in the definite organization of the United States Institute for Textile Research and the broadening of the scope and activity of the Arkwrights, Inc.

United States Institute for Textile Research Permanently Organized

The United States Institute for Textile Research was started in a preliminary way in July of this year, by the formation of a preliminary board of directors who worked out the plans for the body. During following months, the charter and work of the former Textile Research Council was assigned to the body. Following a number of preliminary meetings, the first annual meeting of the organization was held at the Murray Hill Hotel, in New York City, on November 6th, when a permanent organization was established, and officers elected; with plans being announced for definite lines of activity by the organization.

Dr. Stratton.

Samuel Wesley Stratton, former president and present chairman of the corporation and executive committee of the Massachusetts Institute of Technology, and previously director of the Bureau of Standards of the Department of Commerce in Washington, was elected as the first president of the Institute, and Charles H. Clark, who performed valuable service as temporary secretary, was made permanent secretary.

The meeting was largely devoted to organization plans. It was announced that close co-operation would be achieved between the Institute and the Textile Foundation. A brief had been previously drawn up, seeking the sum of $25,000 from the Foundation for promotional activity, providing the Institute raise a similar amount.

A list of general research problems to be considered by the research committee was suggested by Mr. Haven and Dr. Emley.

According to the report made by Secretary Clark, up to the date of the meeting on November 6th, the organization had a membership of 53. The membership fees in the by-laws adopted are as follows: Founder, not less than $10,000; benefactor, not less than $5,000; sustaining, not less than $2,500;—all of these including life membership;life, $1,000; contributing $100 annually; annual memberships, $10.

Arkwrights Broaden Work and Launch Larger Program

THE ARKWRIGHTS, INC., established several years ago by the Southern Textile Association, membership being awarded upon the completion of a practical manufacturing test, plan striking enlargements of the scope of their activity and will effect a broader field of activity in the way of practical manufacturing research, according to plans announced following a continued meeting of the board of directors and executive committee in Charlotte, N. C., on November 11th.

Marshall Dilling, superintendent of the A. M. Smyre Mfg. Co., Gastonia, N. C., is president of the Arkwrights, and has announced plans for broadening the scope of the organization along the lines of research work, as follows:

First, changes in the membership requirements would provide for active, associate, junior, corporate and contributing members; active members to be those Arkwrights who have completed tests; associate members to be those present members who have not completed their tests; junior members, those under 30 years of age; corporate members, concerns engaged in the textile or allied industries; and contributing members, textile manufacturing companies.

The research program calls for the use of a contact man, to call on individuals and mills, acquainting them with the research program, etc., and to assist in carrying out tests. A library, to secure all textile trade paper and literature possible, and to provide abstracts, is proposed, as well as a laboratory of general textile character, eventually to be on a self-supporting basis. Equipment to be augmented as funds become available.

The program also includes testing and fabric analysis work for mills, covering such items as identification of fibers, quantitative analysis, study of fibres, testing of yarns and cords, fabric, dimensions, weights, constructions, etc., special physical properties, resistance to destructive agencies, etc. It also provides for the doing of research work for mills, allowing mills to send their men to the Arkwright laboratory, or to have the Arkwrights do the work on a cost-plus basis.

The studying of major problems of the industry is proposed, covering such tops as the percentage of correct staple in cotton, the study of mildew, the study of the evenness, elasticity and strength of yarns with the idea of setting up an Arkwright standard for the minimum qualifications of various yarn, etc.

THE TREND OF THE TIMES

By DAVID LAWRENCE

Published in the Textile Industry
Only By Cotton

WITH the elections over and a less partisan spirit in politics prevailing, at least for the time being, the business of the hour is organizing our recovery. As the months roll by, the fact is being borne in all too clearly that the problem is not wholly that of America. The necessity for world-wide reorganization is gradually becoming patent. Thus France and Great Britain are discussing a rearrangement of their credits with each other at the same time that the world is looking askance at a possible upset in Germany which may require further revision of reparations whilst fascist Italy and communist Russia loom up as possible brethren in an economic partnership.

The cry in the United States is still for a curtailment of production. Factors beyond the control of American producers are affecting world prices. The amazing spectacle of wheat prices in Chicago being above both Liverpool and Winnipeg is only one of a number of phenomena that seems to characterize the strange procession of events which mark out the present readjustment as epochal.

The further we get from the events of 1929 and the expansion that preceded it, the more we recognize that the readjustment is of such major consequence as to be compared, perhaps, with the economic changes which followed the Napoleonic wars. While the world today is geared up to a larger scale of production and deals in a volume much larger than at any time in history, the economic historian points to the middle of the nineteenth century with its record of prosperity relatively greater than that which has been witnessed in the twentieth century. In other words, the per capita gain was greater and the distribution of wealth perhaps more even. It is a curious phase of American psychology which insists upon believing that record heights have been reached only in our own generation. The American people, in the period just before the Civil War, really played a greater part in foreign trade, relatively speaking, than they do today. The clipper ship was on every sea. International trade was then a basis of American prosperity. So it is not unnatural to look forward once more to a re-birth of American foreign trade as a precursor to a stabilized economic structure at home.

We have used the terms inflation and deflation for a decade, and now the word liquidation seems to have come into its own. The puzzling obstacle is labor. Theoretically, it is counted upon to deflate, but it never does. This means the retention of standards of living for they depend on good wages.

We are drifting into a new era which will, sooner or later, accept involuntarily the idea that the wage levels cannot be seriously disturbed, though to be sure dozens of plans to produce a five-day week are being offered as a means of accomplishing a balance between the new scale of production and the cost of labor. The discussion is all very theoretical still. The important thing is that slowly the leaders of thought are beginning to reconcile themselves to the fact that traditional methods of handling a stock market flurry or a business depression are going by the boards.

For one thing, the effort to produce a better economy at home without consideration of the demands of other peoples abroad, is bound, sooner or later, to be followed by an agitation for a world-wide perspective. While the United States may, for reasons that appear sound to those charged with responsibility, have felt the need for the stoppage of immigration, as well as the erection of a tariff wall, there is no doubt that both factors have produced some kind of repercussion abroad. It takes time for the rest of the world to adjust itself to American action, all of which tends to retard the recovery.

Heroic measures are being taken by major industries in the United States to keep production down, or at least to prevent its increase. The Sherman anti-trust laws are coming in for much comment because they alone stand in the way of concerted action to reduce production of basic products. The Supreme Court of the United States has decided that the law "cannot be evaded by good motives," which has caused many a business man to shiver, for unquestionably, in the present crisis, a number of steps have been taken which are plainly inconsistent with the Sherman law objectives. The question of whether the Administration which, on the one hand, is trying to restore prosperity and, on the other, is faced with a series of Supreme Court decisions, is going to apply its own "rule of reason" will probably never be answered to anybody's satisfaction. But the fact remains that in emergencies many things are done which are not countenanced when those same emergencies are passed.

The passing observer will do well to note that the very discussion of stabilizing industries is significant. It means that each business and industry is finding it necessary to participate in cooperative processes in order to overcome the ill-effects of ruinous competition or the depressing crises that result from unlimited production.

Certainly, as the end of 1930 approaches, the business men of the country are intensively applying themselves to the job of reorganization. Some of the commodities are responding. Cotton, copper, wheat, and steel have been getting most attention. But the "weak situations" in the financial world that have had to be cleaned up from time to time, even though they represent an aftermath of the last three years of speculation, frequently develop for us a psychological reverse. In other words, favorable business developments on the one hand, have not had their full effect on the minds of people generally because coincident therewith have been announcements of bank suspensions which have reflected isolated instances of bad management or bad banking.

Although excellent work has been done by those charitably inclined in the relief of unemployment, the great job of cooperation has yet to be accomplished. The pooling of reserves cannot easily be done in a nation built on individualism, but the basic fact remains that there is plenty of money available to finance the depression. The growth of confidence in the last few weeks has helped, in no inconsiderable degree, in the development of a psychology that the recuperative process is at last under way.

Training Understudies *in Textile Plants*

Seventh of a Series of Articles on

PUTTING the TEXTILE HOUSE in ORDER

By Michael Welsh

COTTON MILLS are today sacrificing much in order to maintain their organization. Executives realize the importance of their ganizations. Exec- it is their fervent hope that they can stand the gaff intact until favorable conditions permit them again to operate their plants profitably.

Many southern cotton mills can proudly boast of the personnel of their employees. A sort of esprit de corps exists and no one can doubt the benefits of such a morale in any organization. Recognition of the important part which industrial peace has played in the southern textile development is general. It is not the object of the writer to discuss in detail in this article the reasons why the South has enjoyed industrial peace in the past, but it is necessary to preface this dissertation on "training understudies" with a few references to the past industrial relationship and the vital need for a continuance of it. Understanding and gradual evolution and development have marked the history of the southern textile industry. Though marked changes have come, they have not been revolutionary, but have been consciously planned. In practically all cases when changes have been drastic—when they have not been the result of natural common normal development—general dissatisfaction and frequently trouble have resulted.

Unquestionably, the maintenance of an even temperament under such economic conditions as now exist is difficult; particularly in the face of aggressive effort of agencies striving to increase their power within the nation by securing control of the southern textile industry. The fate of the textile industry and the South will, to a great extent, be determined by the success of the manufacturers in coping with the situation.

Fallacy of One-Man Organization.

Development must go on, improvements must be made; the industry cannot stand still, but all changes can expediently come only by gradual comprehensive steps. Changes made radically can but refute their purposes. Some few plants, through bitter experience, have realized this. This article is prompted by a realization that southern cotton mills can do much to insure against internal hysteria by putting into practice a certain far-sighted policy of management.

The fallacy of one-man organizations and departments is as old as the ages, yet it is surprising to note how many businesses suffer because understudies have not been trained. The uncertainty of life itself should be a convincing argument for understudies for each and every position of importance. It matters not how efficient the operating executives of an industry may be, the organization is unsound unless it is fortified against natural exigences. Today a man is alive and well; tomorrow he may be ill or die. Promotion within the plant or with another organization may cause him to relinquish his old position, but his duties remain to be performed by someone. It matters not how well his department has functioned under his supervision, unless it continues to do so (barring the effect of uncontrollable influences) he has failed as a leader. An assistant or understudy should be prepared not only to take charge at all times, but he should be trained to carry on as efficiently, without a radical departure from the customary procedure and without discord.

Selecting Understudies.

Regardless of the capacity of a service, a man's obligations to those he serves extends beyond the present. He should anticipate the future and so strain his subordinates that his efforts and influence will be lasting. The selection of assistants or understudies should require serious thought. Just because a man is a good mechanic or a good weaver, or a good clerk, is no indication that he possesses the ability to become a good leader or a good executive. He of course should be well versed in all jobs in his department or plant, but he need not be skilled in every detail. He should by all means be loyal to his superiors and his job—that is a prime requisite. He should be versatile, tactful and ambitious. His interest in his job should be above the average. Tact and a sympathetic understanding of his fellow workers are indispensable to the understudy or assistant. No man should ever be selected as an understudy or an assistant unless he has previously manifested a desire to improve himself. It should be realized when

We once knew a superintendent who couldn't be considered for a bigger job with his company because he had trained no one to take his place. We knew an overseer whose job would have been held for him during an enforced absence, had he but trained someone in his department in his policies and methods.

In the accompanying article the author discusses the importance, the necessity, of training understudies. He says a man's obligation to his firm extends beyond the present, which is true; and closes with a forceful quotation—that "it's the men behind who make the men ahead."

◆ ◆

selecting a man to train for a job of importance, that the requirements of such a job are rarely ever fixed; that constant changes can be expected; and therefore a man selected to take the helm without a flexible mind and a willingness to harmonize with the necessary changes through self-study and experiment would assuredly fail on the job.

Training for the Future.

There can be much said relative to the training of understudies, but since the positions in a cotton mill which warrant understudies are varied, it will be necessary to generalize. Each foreman, superintendent or executive should see that his assistant is familiar with every phase of the work. He should talk matters over with him at all times, and encourage him to realize the importance of his job. Advice and constructive criticism are indispensable in developing an assistant. Particular attention should be paid to his ability to carry out instructions, make necessary changes and deal with his subordinates. Although the party in charge should be relieved of much work by the assistant or understudy, the primary object of the understudy should not be forgotten. He should be adequately trained to assume full control at all times. The training of an understudy is for the future and not for the present.

The understudy idea is not always popular when first introduced. Some people are naturally prejudiced against new ideas; others are afraid that the training of an understudy would mean the loss of their job; and others are just merely indifferent as to the future of the organization. The definite and appreciative understanding of the matter should be had by all in any way affected before understudies are selected, for unless such is the case, little can be accomplished.

Is Logical and Essential.

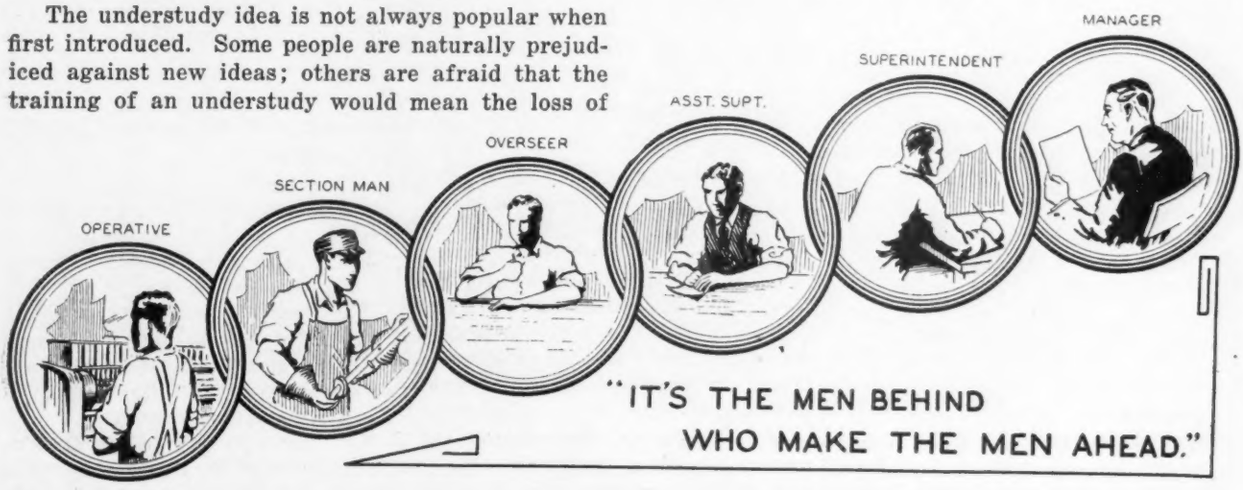
It is needless to say that the understudy system is not a new one; that it has proven its value for years; that it is logical; and in fact essential to real efficiency. No conscientious and capable person should be afraid to train an understudy, for he should realize that one of the prime requisites of a good leader is his ability to select and train men, men who will be living testimonies as to his real value. He, himself, can use the proper training of an understudy as a stepping stone to greater opportunities. Men in charge of responsible positions, who after due consideration fail to see the wisdom of training understudies and who either refuse to or are incapable of training an assistant are not big enough for their jobs and the sooner they lose them the better for their organization.

The Man Behind.

Although this treatise is primarily intended for the "men ahead," it could not possibly achieve the intended purpose unless it awakened a consciousness of the effect a worthy understudy system has on the "men behind." Too many industrial leaders lose sight of the mental attitude of those in their employment. Executives often are generous and philanthropic, they are solicitous of the health and material welfare of their employees, but they do not recognize that something which is frequently termed ambition, that thing which cries out for opportunities of advancement.

Ambition demands more than pecuniary advancement—it is not solely concerned with material progress—it is a craving for an ever-present opportunity of growth and development.

A well-planned understudy system provides an incentive to the men lower down. It opens up avenues for the ambitious in any organization. It stimulates



and encourages. It is a vehicle of loyalty and efficiency. Hundreds of capable, efficient and loyal young men have had their abilities singed and sometimes destroyed just because they were not permitted to believe that they would have a chance. Valuable employees have been lost, men who could have developed into efficient leaders have been forced to eke out their years in menial capacities just because they were employees in organizations where they were not afforded a chance; in industries where no systematic and intelligent systems of promotion were employed.

The writer personally feels very much like a young man who recently said, "I would not want to work for a man if I felt that I was as high as I could go in the organization." If executives would only realize the potentialities of the development of ambitious young men, they would be spared many rocky voyages on the industrial sea. The development of an employee, whether he continues his affiliation with the same organization or not, invariably redounds to the ultimate benefit of the organization which developed him.

The South Must Preserve Her Greatest Asset.

In the cotton mills of the South today it is imperative that men who thoroughly understand mill people and who are conscientiously familiar with conditions affecting the industry fill the future positions of responsibility. We cannot afford to have southern organizations torn asunder by radical doctrines and revolutionary changes. The training of our own men, boys who have grown up in the mill communities, who have worked in the plants, to assume the positions of importance will do much to preserve the South's greatest industrial asset, a healthy industrial relationship.

In putting the textile house in order, provisions for training future executives must be made.

Merle Crowell, formerly editor of the *American Magazine*, gives splendid advice under the caption "It's the Men Behind Who Make the Men Ahead." He says: "If you are fortunate enough to get a little above some other fellows, there is a much better use for your hands than patting yourself on the back. Reach down and lift some of the rest up beside you. Immediately you have started a group of boosters, whose good will and gratitude will do more to help you than you could possibly do to help them."

George S. Harris told us in 1922—

"MEN SHOULD be taught to feel that it is their duty to train other men. They should be taught by the management that their advancement depends always upon their having ready an understudy. I recall reference in a paper once to the 'three point system of promotion,' and have always remembered my impression. Picture an organization from manager down where each man in line is trying to promote himself by making the man ahead so good that he must outgrow his shoes and at the same time training an understudy for his own work. There is an ideal organization. * * * I don't think a manager should ever promote a man unless that man can show that one or more of his assistants is ready for his work."

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BAG AND TEXTILE NEWS.

Walter R. Mondschein, 9940 South Sangamon Street, Chicago, recently announced that he had devised three more new bag and textile calculators that are additions to the present ones now in use. He states that in these new tables there is something that should be of interest to every one who handles cotton goods in any form or phase, and that it should be of special interest to cotton goods brokers, mill agents, and anyone who cuts up cotton goods for any purpose. This is a freight rate table that shows the points per yard on any given construction in any width from 2.00 yard to 11.00 yard goods, showing every .05 yard variation.

Further particulars will gladly be sent to anyone writing Walter Mondschein at the address given in the preceeding paragraph.

:: :: ::

PAIGE AND JONES CHEMICAL COMPANY MAKES AN ANNOUNCEMENT.

The Paige and Jones Chemical Company announces that it has sold to The Permutit Company the Zeolite and lime soda water softening and filter departments of its business, including machinery, inventories, patterns and drawings relating thereto. The Paige and Jones Company has been manufacturing Zeolite water softening apparatus as licensee under The Permutit Company's patents. It is announced that the Permutit Company with its large engineering staff will be in position to furnish repair parts and replacements for Paige-Jones mechanical equipment now in use. The latter company will continue the chemical branch of its business in which it has held a prominent position for the past sixteen years.

:: :: ::

PROMOTION FUNDS INCREASED.

The Durene Association of America state that since their recent announcement of an increase in promotion funds bringing their appropriation for 1931 up to approximately half a million dollars, they had received from various leaders in the cotton field messages of congratulations indicating widespread interest in the service the organization is rendering.

It has been widely expressed that the making permanent of this association, and the development of even more extensive promotional plans for the coming year will have a decidedly beneficial effect in stimulating interest in quality yarn-mercerized cotton in manufacturing, wholesaling and retailing markets.

:: :: ::

N. C. S. C. MAKES IMPROVEMENTS.

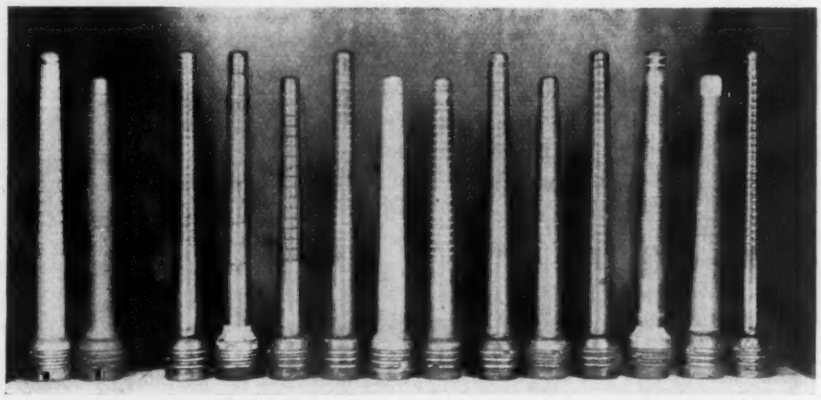
Officials of the textile school of North Carolina State College state that manufacturers of textile machinery have cooperated with the school wonderfully by supplying them with the latest improvements and devices available. The Casablancas and Saco-Lowell systems of spinning have been replaced with the latest developments in long draft spinning.

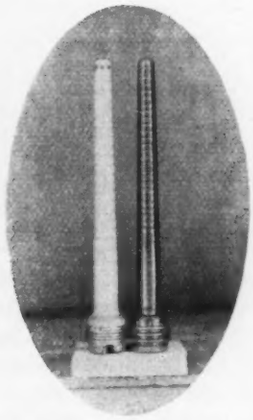
The Bahnson Company have recently installed several of their latest type of humidifier heads in the weave room, together with their latest development in automatic control.

The Hamphill Company have recently supplied the knitting department with one of their latest knitting machines equipped with the 12-step and horizontal striping attachment.

The Gaston County Dyeing Machine Company have furnished the dyeing department with a sample dyeing machine complete with pump and motor.

Is It Practical to Standardize Mill Supplies?





The fourteen quills at the left were replaced by the two shown in the oval, in one southern mill which found it possible to eliminate much of their excess supplies and styles by investigating and standardizing on supplies.

By John W. Card

THIS ARTICLE was written merely to get you to thinking as to what you can do at your plant along the line of standardizing upon supplies. If standardization effects an economy, then it is sorely needed and will be welcomed in these times at any mill.

Mr. Card tells how one mill effected big savings, with no loss to any party involved, by reducing the number of styles of bobbins and shuttles desired. Perhaps you can do this at your plant.—THE EDITOR.

A GREAT DEAL has been said of late concerning the possibilities of standardization. *The Index*, published by the New York Trust Company, states that "possibly the outstanding feature of the American Industrial system is standardization."

According to official estimates from Washington, $300,000,000 is being saved annually through the application of the principles of simplification and by means of standardization.

The Department of Commerce has established its Division of Simplified Practice, and through cooperation of the industries concerned, has brought about some remarkable reductions in variety of types of products. The following table shows the percentage of elimination of types in certain industries:

Commodity	From	To	Per Cent Elimination
Paving bricks	66	5	92
Common bricks	44	1	98
Milk Bottles	49	4	92
Bed Blankets	78	12	85
Range boilers	130	13	90
Steel reeinforcing bars	32	11	66
Paper, grocers' bags	6280	4700	25
Solid section steel windows	42,877	2,244	95

That there are many advantages in standardization is obvious. Standardization and efficiency go hand in hand. Once we are able to standardize, then the way is open for efficient production. Efficiency, in turn, enables us to reduce costs. The great reduction in the price of articles, as for example, automobiles, turned out by mass production and efficient methods, and the benefits to the makers, as well as to the consumers of these articles is argument enough to cause us to favor it. All about us we see the growth of big chain organizations that have standardized, and so reduced costs that they have been able to attract a big portion of the trade.

Standardization would gain us keener competition. Each manufacturer would know that his articles must be sold on the basis of better materials and lower costs in the standard supply items, instead of on the ground that a new "twist" added to a particular item would make it more suitable to a particular consumer. It would aid the manufacturer in that he could reduce inventory, reduce waste, and avoid changes in manufacturing tools and methods. It would help the wage earner in that he would be able to increase his production and share in the benefits thereof.

Standardization of cotton mill supplies is of vital interest to COTTON'S readers. Cotton mill supplies of a large variety of types are being sold by salesmen who emphasize the point that their particular type is *the* type to use. The mill is the ultimate consumer of these supplies, and must pay the bill that arises from having too many varieties of types, and too much cost due to smaller production of each type.

To enumerate some of the opportunities for stan-

and encourages. It is a vehicle of loyalty and efficiency. Hundreds of capable, efficient and loyal young men have had their abilities singed and sometimes destroyed just because they were not permitted to believe that they would have a chance. Valuable employees have been lost, men who could have developed into efficient leaders have been forced to eke out their years in menial capacities just because they were employees in organizations where they were not afforded a chance; in industries where no systematic and intelligent systems of promotion were employed.

The writer personally feels very much like a young man who recently said, "I would not want to work for a man if I felt that I was as high as I could go in the organization." If executives would only realize the potentialities of the development of ambitious young men, they would be spared many rocky voyages on the industrial sea. The development of an employee, whether he continues his affiliation with the same organization or not, invariably redounds to the ultimate benefit of the organization which developed him.

The South Must Preserve Her Greatest Asset.

In the cotton mills of the South today it is imperative that men who thoroughly understand mill people and who are conscientiously familiar with conditions affecting the industry fill the future positions of responsibility. We cannot afford to have southern organizations torn asunder by radical doctrines and revolutionary changes. The training of our own men, boys who have grown up in the mill communities, who have worked in the plants, to assume the positions of importance will do much to preserve the South's greatest industrial asset, a healthy industrial relationship.

In putting the textile house in order, provisions for training future executives must be made.

Merle Crowell, formerly editor of the *American Magazine*, gives splendid advice under the caption "It's the Men Behind Who Make the Men Ahead." He says: "If you are fortunate enough to get a little above some other fellows, there is a much better use for your hands than patting yourself on the back. Reach down and lift some of the rest up beside you. Immediately you have started a group of boosters, whose good will and gratitude will do more to help you than you could possibly do to help them."

George S. Harris told us in 1922—

"MEN SHOULD be taught to feel that it is their duty to train other men. They should be taught by the management that their advancement depends always upon their having ready an understudy. I recall reference in a paper once to the 'three point system of promotion,' and have always remembered my impression. Picture an organization from manager down where each man in line is trying to promote himself by making the man ahead so good that he must outgrow his shoes and at the same time training an understudy for his own work. There is an ideal organization. * * * I don't think a manager should ever promote a man unless that man can show that one or more of his assistants is ready for his work."

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BAG AND TEXTILE NEWS.

Walter R. Mondschein, 9940 South Sangamon Street, Chicago, recently announced that he had devised three more new bag and textile calculators that are additions to the present ones now in use. He states that in these new tables there is something that should be of interest to every one who handles cotton goods in any form or phase, and that it should be of special interest to cotton goods brokers, mill agents, and anyone who cuts up cotton goods for any purpose. This is a freight rate table that shows the points per yard on any given construction in any width from 2.00 yard to 11.00 yard goods, showing every .05 yard variation.

Further particulars will gladly be sent to anyone writing Walter Mondschein at the address given in the preceeding paragraph.

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PAIGE AND JONES CHEMICAL COMPANY MAKES AN ANNOUNCEMENT.

The Paige and Jones Chemical Company announces that it has sold to The Permutit Company the Zeolite and lime soda water softening and filter departments of its business, including machinery, inventories, patterns and drawings relating thereto. The Paige and Jones Company has been manufacturing Zeolite water softening apparatus as licensee under The Permutit Company's patents. It is announced that the Permutit Company with its large engineering staff will be in position to furnish repair parts and replacements for Paige-Jones mechanical equipment now in use. The latter company will continue the chemical branch of its business in which it has held a prominent position for the past sixteen years.

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PROMOTION FUNDS INCREASED.

The Durene Association of America state that since their recent announcement of an increase in promotion funds bringing their appropriation for 1931 up to approximately half a million dollars, they had received from various leaders in the cotton field messages of congratulations indicating widespread interest in the service the organization is rendering.

It has been widely expressed that the making permanent of this association, and the development of even more extensive promotional plans for the coming year will have a decidedly beneficial effect in stimulating interest in quality yarn-mercerized cotton in manufacturing, wholesaling and retailing markets.

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N. C. S. C. MAKES IMPROVEMENTS.

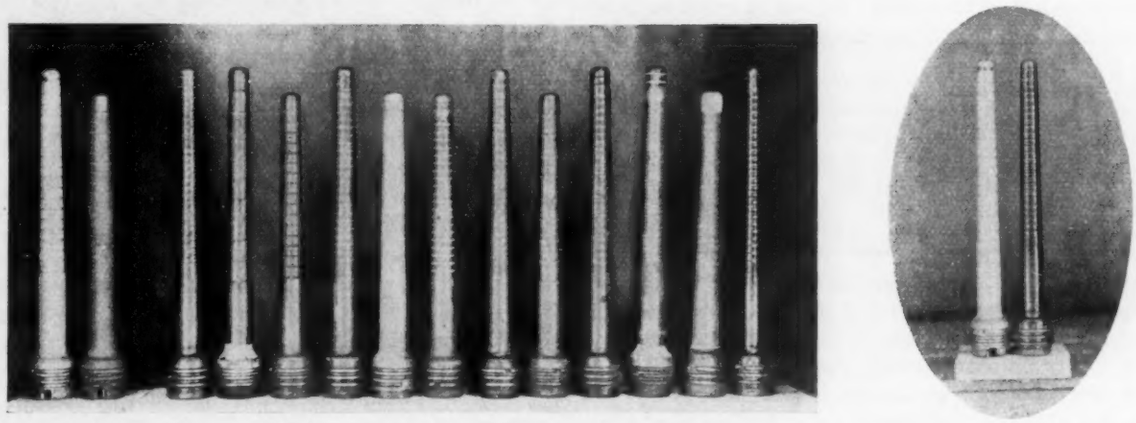
Officials of the textile school of North Carolina State College state that manufacturers of textile machinery have cooperated with the school wonderfully by supplying them with the latest improvements and devices available. The Casablancas and Saco-Lowell systems of spinning have been replaced with the latest developments in long draft spinning.

The Bahnson Company have recently installed several of their latest type of humidifier heads in the weave room, together with their latest development in automatic control.

The Hamphill Company have recently supplied the knitting department with one of their latest knitting machines equipped with the 12-step and horizontal striping attachment.

The Gaston County Dyeing Machine Company have furnished the dyeing department with a sample dyeing machine complete with pump and motor.

Is It Practical to Standardize Mill Supplies?



The fourteen quills at the left were replaced by the two shown in the oval, in one southern mill which found it possible to eliminate much of their excess supplies and styles by investigating and standardizing on supplies.

By John W. Card

THIS ARTICLE was written merely to get you to thinking as to what you can do at your plant along the line of standardizing upon supplies. If standardization effects an economy, then it is sorely needed and will be welcomed in these times at any mill.

Mr. Card tells how one mill effected big savings, with no loss to any party involved, by reducing the number of styles of bobbins and shuttles desired. Perhaps you can do this at your plant.—THE EDITOR.

A GREAT DEAL has been said of late concerning the possibilities of standardization. *The Index*, published by the New York Trust Company, states that "possibly the outstanding feature of the American Industrial system is standardization."

According to official estimates from Washington, $300,000,000 is being saved annually through the application of the principles of simplification and by means of standardization.

The Department of Commerce has established its Division of Simplified Practice, and through cooperation of the industries concerned, has brought about some remarkable reductions in variety of types of products. The following table shows the percentage of elimination of types in certain industries:

Commodity	From	To	Per Cent Elimination
Paving bricks	66	5	92
Common bricks	44	1	98
Milk Bottles	49	4	92
Bed Blankets	78	12	85
Range boilers	130	13	90
Steel reeinforcing bars	32	11	66
Paper, grocers' bags	6280	4700	25
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That there are many advantages in standardization is obvious. Standardization and efficiency go hand in hand. Once we are able to standardize, then the way is open for efficient production. Efficiency, in turn, enables us to reduce costs. The great reduction in the price of articles, as for example, automobiles, turned out by mass production and efficient methods, and the benefits to the makers, as well as to the consumers of these articles is argument enough to cause us to favor it. All about us we see the growth of big chain organizations that have standardized, and so reduced costs that they have been able to attract a big portion of the trade.

Standardization would gain us keener competition. Each manufacturer would know that his articles must be sold on the basis of better materials and lower costs in the standard supply items, instead of on the ground that a new "twist" added to a particular item would make it more suitable to a particular consumer. It would aid the manufacturer in that he could reduce inventory, reduce waste, and avoid changes in manufacturing tools and methods. It would help the wage earner in that he would be able to increase his production and share in the benefits thereof.

Standardization of cotton mill supplies is of vital interest to COTTON'S readers. Cotton mill supplies of a large variety of types are being sold by salesmen who emphasize the point that their particular type is *the* type to use. The mill is the ultimate consumer of these supplies, and must pay the bill that arises from having too many varieties of types, and too much cost due to smaller production of each type.

To enumerate some of the opportunities for stan-

dardization of supplies in the cotton mill:

Shuttles are among the costliest of the individual items that go to make up the list of loom supplies. There is the case of the mill that recently checked up and found they were using 27 different kinds and styles of shuttles. This mill worked over the problem and found they could reduce the number of shuttles to less than half.

As against this there is the case of another mill that has standardized on two different kinds of shuttles for a mill of more than 2,700 looms. This mill makes twills, sateens, ducks, corduroys, moleskins, velveteens, draperies, osnaburgs, repps, moires, and specialties. Its filling numbers cover a range from 5s to 45s. It seems reasonable to assume that if this mill can make the kinds of cloth listed with two kinds of shuttles, that many other mills could materially reduce the number of types of shuttles in use. There is too much changing of shuttles, as well as other mill supplies, to suit the individual taste. Some real tests would often show the purchaser of supplies that nothing is to be gained by switching from one type to another. These switches are too often made because some new overseer likes a different type, or because the work is running bad, and somone lays it at the door of this or that supply item.

OF COURSE, all of the examples cited in this article may not be applicable to every plant. But every reader, by applying some thought, can use these suggestions as a means of locating a number of items around his plant where standardization can be effected. Will you do it?

Filling quills take high rank when we check up on supply costs. A mill must have 150 to 250 quills to each loom. The life of a quill is, conservatively, six years. In other words we must replace one sixth of the quills each year. There are many kinds of quills on the market. Here is a place where we can standardize to advantage. In one of the accompanying illustrations is a picture showing the fourteen kinds of filling quills that were in use in one mill. These fourteen quills differ one from another in small details, as: some have brass bushings in the base, others have not; some brass bushings come flush with the base of the quill, while others are turned up over a portion of the outside of the base; some are enamelled, and others plain; some have raised rings around the body, others have sunken rings and still others are of the stepped barrel type.

That it was not necessary to have such an assortment of quills is shown by the fact that the two quills pictured have taken the place of the fourteen formerly in use. It is true that it was necessary to make a change in the small portion of the looms that had been using the short quills in order that the long quill could be used thereon, but the money necessary for the change was well spent.

Cotton and steel heddles are sold in varied styles. In one mill they had been using five kinds of steel heddles. They differed one from another in width thickness, or some bend in the body. One of these types has been found sufficient for the needs of a variety mill, whereas all five had been in use in that mill.

At another mill there were five types of spools. Each of these spools was six inches inside length, and each had the same diameter barrel. They differed in the type of heads used, and in the materials from which they were made. All of them can be used in the same creel, although there is a difference of three-eighths of an inch in overall length from the shortest to the longest.

Any of us can think up a long list of supplies where duplication is being practiced and no advantage being gained by so doing, as for instance:

Belting comes in a wide variety of thicknesses, treatments, etc.

Brushes and brooms are of different types and materials.

Loose pulleys, for spinning frames, have different bores, so that they can not be interchanged with those from other frames, located in an adjoining room.

Wooden and metal wheels for harness straps are made for the same work, but of different diameters.

Leather harness straps are rounded or flat, wide or narrow, as the user chooses.

Wooden heddle rods are of different widths and thicknesses for the same kind of work.

Drop wires are of various metals and makes, but generally of one size.

Section beam heads are of wooden and metal make, and often of slightly different lengths, to the embarassment of the slasher tender who would make a good selvage.

It is recognized that all mills cannot use the same supplies. It is certainly true that there could be a larger degree of standardization in different mills that make the same kind of goods. The fact that one denim mill, for instance, uses different type shuttles and quills from another denim mill, with the same kind of looms, is not an argument that such is necessary. It is true because the mills are managed by men of different ideas. The fact remains that the two mills could use the same kind of supplies.

And last, but not least, much could be said on the subject of standardization of sizing materials. In no other department of the cotton industry is there such diversity of opinion as to what is best to use. Almost every mill has a different combination of starches, greases, and softeners. Yet there is not much doubt but that a small number of good size mixes could be found that would be suitable for the work of 95 per cent of all the mills. It is largely because so little is known of the properties that go into a size mix that so many different mixes are in use.

DO YOU KNOW how many different styles of bobbins, shuttles, belting, or any other supbobbins, or shuttles, or belting, or any other supply, you are using? Perhaps a little investigation will afford the opportunity of effecting some savings as did the mills mentioned in this article. You can do it without a loss to anyone involved.

Some Causes of Spots in Bleached Cotton Goods

By J. Merritt Matthews

A PROMINENT AUTHOR on finishing subjects discusses a problem that has occurred to many readers, in different kinds of finishing. He stresses the importance of a good water supply, and gives some interesting suggestions as to methods of making tests on bleached goods to determine the cause of spots.—THE EDITOR.

ONE OF the chief defects to be met with in the bleaching of cotton goods, especially in the form of piece-goods such as woven cloth, knit-wares, and the like, is the appearance of spots. These may develop either immediately on the finishing of the bleached goods or their appearance may be delayed until after the fabrics have been stored or marketed. They are usually brown in color, sometimes quite a dark brown and then again sometimes of a light tan or buff color of a strongly marked yellowish tone. When these spots appear during the bleaching operations or during the subsequent finishing operations, it is usually a rather easy matter to accurately trace their cause and to adequately provide for their prevention and removal. But when the spots do not develop until quite some time after the goods have been made up and marketed, their origin is usually a rather difficult matter to ascertain.

As an illustration of this I can recall the development of spots in bleached underwear fabric. The fabric was knit and the processes of bleaching and finishing were carried out in the mill, the cloth being subsequently cut up and made into underwear garments. The yarn was of good quality, and the fabrics may be said to be of the better order, being evenly knit and free from spotty or marked yarns. After boiling-out and after bleaching and drying the cloth seemed to be remarkably perfect in color and handle. There was no suspicion of spots or of uneven quality in the bleach. The cloth cut up well and the garments turned out seemed to be of a highly uniform and good quality. They were readily accepted by the trade and were easily marketed under an established brand, bringing a good price as a quality product. There was nothing at this point of the matter to indicate in any manner the existence of trouble or of defects.

Everything Going Well.

These goods moved along rather rapidly, being put out in a good season when purchases were being freely made. The customers of the retail shops seemed to be pleased with them and there was consequently a good chance for the mill to establish a strongly entrenched trademark that would prove valuable in holding the business during forthcoming seasons. The managers of the mill were pleased with themselves and with the personnel of their bleaching department. There was no cloud on the horizon and the only concern was to deliver goods fast enough to keep the trade satisfied.

But there was misfortune ahead though little suspected. One day, a customer of the retail shop opening up the package of a newly made purchase of union suits found some of them to be spotted with light-brown stains. Of course he (or she) brought them back to the shop for exchange, and this led the shopkeeper to investigate the remaining part of the stock of this particular brand of garments. To his astonishment and chagrin he found that quite a number of the garments were spoiled by the development of these brownish spots. Naturally, rather incensed, he soon got into communication with the wholesaler and thence back to the mill itself.

Then Trouble Begins.

The mill, of course, had to order the goods to be sent back, and this was only the beginning of an avalanche of complaints from wherever these garments had been introduced. It was now a couple of months since the first goods had gone forward and in almost all cases where the goods had lain in their boxes for a month or more there were many examples of the spotted fabric. The trade was indignant and the mill managers were at their wits' end. The selling department naturally placed the blame on the bleachery and the boss in the bleach-house had a very unpleasant time of it as almost every day witnessed new complaints and box after box of returned stock.

Various changes and alternatives were introduced into the bleaching methods, but as the trouble did not develop until after a couple of months in the package, there was no way to check up and tell with any degree of certainty whether the bleached fabrics would be free from spots or not. As a matter of fact the defects kept on developing. This particular line of knit-goods was regarded with grave suspicion by the trade and it became a difficult matter for the selling department to placate those who had received the defective shipments. They were afraid to purchase any longer, not being willing to risk the loss in the reputation of the high class quality of their goods. The personnel at the mill was in a terrible state of mind; they did not know what to do. To them bleaching was a secret art; chemicals and such things were unknown and disastrous factors in a situation entirely clouded by lack of technical knowledge.

What to Do?

But what to do? Various suggestions were tried out. Friends in other mills, salesmen from supply houses, and the heads of every department in the mill,

of course, had their notions as to the causes and as to methods of eliminating them. This, that and the other thing was tried out, and then there were weeks of anxious waiting to find out if the trouble was removed. But the same old spots kept recurring until finally the trade lost confidence in the line entirely and it became almost impossible to sell the goods on the market. This, in connection with the losses sustained in taking back goods, brought the good name and credit of the mill to a parlous condition.

There was talk of giving up the bleaching altogether, the mill limiting itself to the manufacture of cloth in the grey and then sending it out and having it bleached and returned for cutting up and making into garments. This, however, would be a considerable stepdown in the standing of the mill and there would also be a curtailment of profits that would make the business undesirable from an economic point of view. Finally it occurred to the president to get the services of a chemist, and in this manner a thorough investigation of the causes of this particular trouble was carried out. It proved to be a very interesting hunt for the cause of the spots, and on this account it is considered worthwhile to go into some detail about it.

"IT SEEMS quite remarkable that such a simple corrective operation as that of filtering the water would eliminate a very serious and mysterious defect in these bleached goods. * * * Water is a peculiar medium; it is not always exactly what it appears to be. Though seemingly clear and pure, nevertheless there may be many things that may be present in the water of a pond, and it is on this account that a mere casual examination of its quality and properties may sometimes lead one far astray. It may not be thought essential to go to the bother of filtering an apparently perfect water, but when mysterious troubles occur, it is well for the wise bleacher to immediately go back to first principles and have the water supply investigated to its minutest detail."

A Method of Testing for Clues.

After all the obvious possibilities had been checked over and one after another discarded, owing to lack of confirmation of any improvement in the defect, the chemical man went back to first principles and began to test out the defective goods to see if some clue could not be obtained. A simple test that can be easily conducted with a small amount of chemical apparatus is that of determining the amount of ash left after the complete ignition of a sample of the fabric. One needs, it is true, a fairly accurate scales to determine the weight of the small quantity of ash that is left. A laboratory scales that will weigh to a hundredth of a gram, with a set of corresponding weights is needed. We also need a small porcelain crucible, a pipe-stem triangle as a holder for the latter, and something on which to support the triangle, such as a ring-stand or a suitable clamp. A Bunsen burner is also required, and it is convenient to have a pair of laboratory tongs for holding the sample of cloth.

As this test is an important one in the consideration of bleached goods, it will perhaps be best to go somewhat into the details so that those interested in the matter as well as bleachers who are not trained chemists may readily conduct the operations themselves. A strip of the cloth is cut to a weight of ten grams. This weight may be taken on an ordinary small apothecaries' scales capable of weighing to one-tenth of a gram. A finer degree of weighing need not be used as the quantity of the sample taken is sufficiently large to insure the proper accuracy. It is well to employ strips of the cloth about an inch wide and to cut these into pieces about four inches long, adding these to the pan of the scales until just ten grams is indicated. Samples of cloth for this purpose should be selected from the spotted portions and also samples from the good portions of the fabric, the latter being tested in order to act as a check on the results.

After weighing out the ten gram sample, the separate little strips are taken in the tongs and held in the flames of a Bunsen burner until they are well ignited. They then are held over a small porcelain crucible which has been previously weighed on the laboratory scales, or "balance" as it is more often called by the chemist. This weight should be accurately taken to the hundredth of a gram (0.01 gm.), but there is no use bothering about wasting time on any attempt to weigh it down to a thousandth of a gram (a milligram) as is usually done in fine chemical work where a very delicate set of scales is employed. It will be found that the ignited strips burn very readily and when completely charred they are dropped into the crucible. This latter is now being heated over a Bunsen flame, resting in the pipe-clay triangle as a support, and the charred portion of fabric will be rapidly reduced to a light-colored ash, from which all combustible matter has been burned off, leaving only the small residue of mineral matter called the "ash."

This ignition is continued until the entire ten gram lot of the sample is completely burned up to a glowing ash. The heating of the crucible is continued for a sufficient length of time to insure the complete burning off of all combustible matter. It will be found that the bulk of the ash is quite small; in most cases it looks almost insignificant. The crucible is now allowed to cool, and is then weighed again on the same balance employed for obtaining its empty weight. As the use of a concrete example will serve best in illustrating this matter, we give the results of an actual test carried out in the manner described above.

Weight of the cloth sample	10.0 grams
Weight of the empty crucible	16.32 grams
Weight of the crucible with ash	16.58 grams
Weight of the ash	0.26 grams

This is the amount of ash for a sample of 10.0 grams, and therefore is equivalent to 2.6 per cent on the weight of the sample.

A similar test conducted on a piece of the fabric free from any apparent defect, gave the following data:

Weight of the empty crucible	16.34 grams
Weight of the crucible with ash	16.35 grams
Weight of ash	0.01 grams

and this is equivalent to 0.1 per cent.

It has been rather well established that the ash of raw natural cotton is about one per cent, and the ash

of well-bleached cotton is about 0.06 to 0.10 per cent. If it is much over the latter figure it is an indication that the bleaching is not thorough, even if the material were not defective in any other manner. It will be noticed in our example that the ash of the defective or spotty portion of the fabric is twenty-six times as great as the good part, the latter being normal in this respect. In fact it is more than twice as much as the ash of the raw unbleached cotton. Now we may presume that the mineral matter of the raw fiber in the spotted portions has been removed in the bleaching operations to a large extent, and therefore the ash of these defective parts is something additional that has been absorbed by the fibre.

Eliminating Some Probabilities.

The appearance of the ash in the crucible was a creamy white color and it was of a light powdery nature. This would indicate that it probably consists principally of lime and magnesia compounds. The question now arises as to how and why this large excess of mineral matter is to be found in the defective parts of the fabric while the rest of the goods shows only a normal content. It is a matter of proper interpretation to be able to follow this clue through to the end. A check-up of the boil-out and the subsequent treatments with bleaching powder and acid liquors did not lead to any suspicion that the excess of mineral matter was due to channeling of the kier-liquor in the boil-out or of spotting of the goods with undissolved chloride of lime. Possibilities of this sort had been eliminated by careful processing in all operations.

An investigation of the water employed was thought to be the very best way of getting at the trouble. This water was obtained from a rather large pond, being pumped up to an elevated tank and from there distributed through the mill as desired. The water seemed clear and of good color. Its rough analysis showed it to contain very little mineral matter, either suspended or dissolved. In other words, it was quite a soft water and apparently free from undesirable ingredients. A number of samples of this water, however, were filtered through pieces of the knit cloth similar to that on which the bleaching was being conducted, and then these pieces were put through the regular bleaching operations. Strange to say that when ash tests were taken on these bleached samples a few of them showed a high figure while the most of them were normal, showing less than 0.10 per cent.

The Effect of Water.

Without wasting too much time on details and the following out of various leads that led only to negative results, it will suffice to say that it was eventually discovered that the water from the pond was not as pure as it looked. It was found to contain colonies of a sort of alginaceous material that could only be discovered by a close microscopic testing. These occurred in occasional floating masses, apparently, and were filtered out by the cloth in the boil-out. The organic substance was rendered lifeless by heating in the kier, forming variously sized masses of a slightly aglutinant material which was forced into the cloth by the pressure of the circulating kier-liquor. It evidently became fixed very permanently in the fiber, as it was not removed at all by washing or even by the subsequent bleaching operations.

This albuminous-like substance apparently gave to the fiber in which it was absorbed the property of fixing a relatively large amount of lime, derived either from the small amount of dissolved lime salts in the water itself or from the lime employed in the bleaching in the form of bleaching powder. It also had the property of gradually developing a brownish color, due no doubt to a gradual oxidation of the glutinous lime compound by the air. Or it may have caused an alteration and partial breakdown in the fiber which it impregnated, and the products of the decomposition developed the brownish stain. To many bleachers all this may seem to be to a large extent in the scientific imagination of the chemist. But the proof of the pudding is truly in the eating thereof, and it is rather easy to prove up the conclusions of a laboratory investigation in actual practical operations.

In this case the matter was rather well proved up by passing the water through a filter that happened to be at the mill and which was fortunately connected up with the water system of the bleachery. It was naturally presumed that the filter would take out these alginaceous substances in the water. This proved to be the case, for the use of the filtered water eliminated the defect in the goods entirely and moreover when analyses of the bleached cloth were made as to the amount of ash or mineral matter in the fiber, it was found that the bleached goods showed a remarkably low percentage of ash. The finished goods were nice and white and even after months of storing there was no showing any more of the brownish spots.

Where Do They Originate.

The question naturally arises: What do the brownish spots consist of; and why is it that they do not develop until quite a long time after the bleaching operations? The answer to these questions is more or less a matter of speculation, but by employing a little scientific imagination we may be allowed to assume that, in the first place, the alginaceous matter occurs in the water only in spots and is not evenly distributed throughout the bulk of the water. Water of this character passing through the cloth in the kier deposits the glutinous matter in spots or streaks as it may happen to occur in the liquor. This accounts for the spotted appearance of the cloth, even after assuring oneself that the kier is functioning properly and that there is practically no channeling.

This glutinous matter is readily absorbed by the fiber, especially under the conditions pertaining to the operating kier during the boil-out. It is highly probable that the relatively high temperature combined with the presence of the alkaline liquor renders the alginaceous matter insoluble and thus fixes it in the fiber. And furthermore this glutinous matter apparently combines readily with the lime salts present in the water under these conditions; or, as is even more likely, it combines later on with the lime compounds in the bleaching liquors in such a permanent manner that the combination is not broken up by the subsequent washing and soaping treatments. No doubt this

compound is practically colorless or white to start with, which explains the fact that the defect is not apparent immediately after the bleaching and finishing operations, but only develops after a considerable period of storage.

Just what takes place during the storage is a matter of conjecture as no definite facts of the changes effected either in the fiber itself or in the glutinous compound could readily be obtained without a very long and involved chemical and microscopical investigation. The results, however, indicate that this organic compound suffers an oxidation and a drying-out which causes the formation of brownish colored decomposition products, and so the development of the stain proceeds. As this stain was not accompanied with any noticeable weakness of the fiber, it was apparent that there was no breakdown of the cotton structure itself, such as sometimes occurs as a result of overbleaching or of faults in boiling-out, where an injury to the fiber is actually brought about in such a manner that the organic parts of the cell are disrupted and disintegrate. This condition also leads to the development of a brownish-yellow stain, but of a somewhat different appearance, and this stain is always accompanied by a weakening or tendering of the cloth in the stained areas.

It seems quite remarkable that such a simple corrective operation as that of filtering the water would eliminate a very serious and mysterious defect in these bleached knitgoods. The reputation of the mill, in fact, the very integrity of its condition, was dependent on the elimination of this fault. Of course, there are lots of other causes of spots and stains of a very similar appearance to this one, and at first it would be natural for the bleacher, or indeed the chemist himself, to believe in the presence of one or more of these common evils. But as the correction of these was taken care of and as the defect still persisted, the cause had to be looked for in something hidden, in some factors that had not yet been investigated and accounted for. It is well in such cases to take nothing for granted, but to submit every possibility to an investigation. It will not be long before some little clue or the gradually developing intuition of the chemist gets one on the right track, after which it is a comparatively easy matter to trace the defect to its proper cause.

Water is a peculiar medium; it is not always exactly what it appears to be. Though seemingly clear and pure, nevertheless there are many things that may be present in the water of a pond, and it is on this account that a mere casual examination of its quality and properties may sometimes lead one far astray. It may not be thought essential to go to the bother of filtering an apparently perfect water, but when mysterious troubles occur it is well for the wise bleacher to immediately go back to first principles and have the water supply investigated to its minutest detail. The safety of the product and the assurance of its continued high quality are usually founded and stabilized on the employment of as perfect a water as possible.

Spray Printing of Textiles

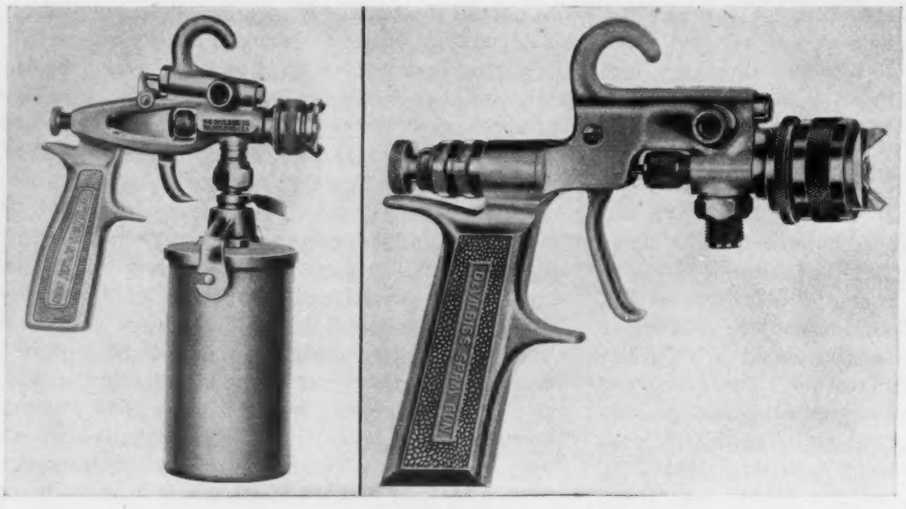
by Charles E. Mullin,
Clemson College Textile School,
Clemson College, S. C.

THE SPRAY PRINTING of textile materials is very similar to the now very common spray painting of automobiles, houses, machinery, etc., by means of the so-called "air brush." The procedure varies somewhat with the result desired. In many cases a cut-out stencil is used in textile work. In fact many stencils are sometimes used on the one design, just as is also done in spraying multi-colored stencilled designs or borders on the walls of rooms, etc. In other cases no stencil is used, the air brush being adjusted to give either a cloud of fine spray, drops of coloring matter, or a continuous fine line of color.

The colors used in spraying vary according to the result desired. In some cases a pigment color is applied in a suitable binder. In others, real dyestuffs in aqueous or solvent solutions are used. In the best class of work on cotton and rayon the vat dyestuffs are applied. As yet it is somewhat difficult to find dyestuffs that are fast to light, washing and rubbing when applied from an aqueous spray.

Spray printing offers many possibilities, especially in small plants, garment factories, etc., as it can be applied to all types of materials, from the finest crepe-de-chines to the heaviest velvets and plushes, without disturbing the weave or pile of the goods. It can also be applied to completed garments, etc., to give a very artistic and beautifully shaded "hand-made" effect. While we at present find many scarfs, etc., upon the American market, this work is far more advanced and utilized abroad than in America.

The Clemson College Textile School is giving the students in the Textile Chemistry Division special instruction in the spray printing of textile materials and has recently installed the De Vilbiss spray gun for large stencil work, and the artists' air brush for free-hand coloring.



DeVilbiss spray guns for textile printing.

V-Belt Drives *for* Textile Mills

By H. W. Reding, Textile Engineer
Westinghouse Elec. & Mfg. Co.

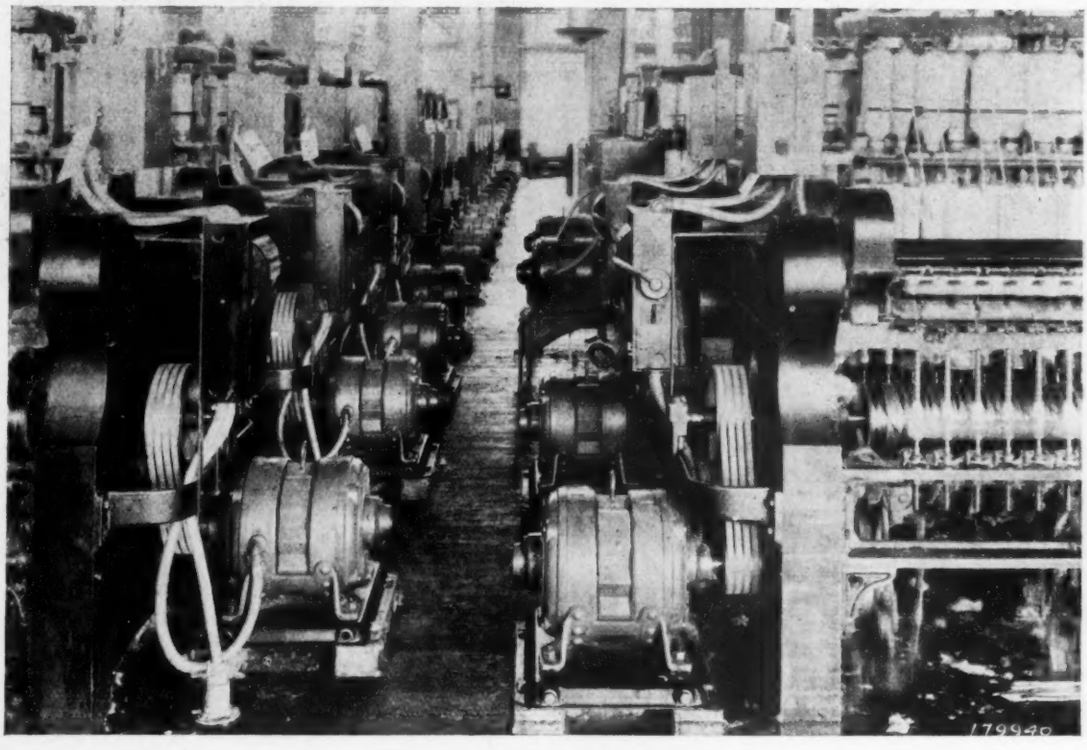
THIS is a brief and interesting discussion of how the V-shape belt is made, its application to textile machinery, a description of its characteristics, method of installation, and features of its maintenance. This article, dealing with this new type of drive which is finding increasing use in mills, will be of interest to those using it and to those considering its application.
—THE EDITOR.

THE V-BELT DRIVE is a short center drive which has wide possibilities of application in cotton and other textile mills. It is designed to hold machine speed at a predetermined and constant value, insuring maximum production, and is quiet and vibrationless, eliminating harsh jerks which might damage carefully adjusted and expensive machinery. In brief the V-Belt drive consists of several endless belts having V-shaped cross section operating in multiple around grooved pulleys. The belts are made of rubber and rubberized cotton cord and fabric which is vulcanized together. These materials can be made to give strength and long life under hard conditions in a V-Belt just as they can in a modern automobile tire. The drive is primarily designed for operating on short centers with a speed ratio of from 1:1 up to about 7:1. The effectiveness of the drive depends upon the arc of belt contact on the small pulley and this should never be less than 120 degrees. The drive is reversible since it works equally well with driving tension above or below.

The design and use of most textile machinery requires a drive of some type, such as belt, gear, chain, or V-Belt. Until recently, the belt, gear, or chain has been used in most cases, and now there is the additional type of drive which offers certain definite advantages. For ceiling mounted motors driving groups of machinery, it has been very wide practice to use belts or chains. For individual drives on drawing, roving, spinning and twister frames, the chain has been nearly universal. Gears are commonly used only with individual motor drives on looms. The V-Belt drive has been successfully applied to individual drive on frames, also to the drive of shafting, pickers, fans and other machinery.

The requirements of a drive such, for instance, as is used for the individual drive of a spinning frame may be stated very simply. The drive must transmit the power steadily at a fixed ratio of speed reduction with a minimum of maintenance and replacement cost. Any essential departure from these requirements makes the drive uneconomical.

The V-Belt drive depends for tractive effort upon the grip of the wedge shaped belt in the pulley groove. The belt must not touch the bottom of the groove. The load pull on the tight side of the drive pulls the belt into the grooves thereby giving the necessary wedging action. With the belt properly adjusted, the V-Belt

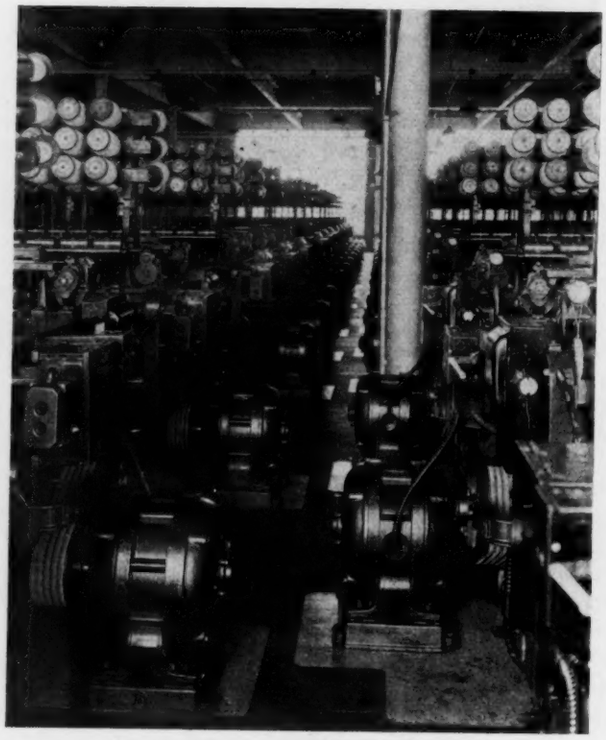


V-Belt type of drive on spinning frames.

Courtesy, Westinghouse Elec. & Mfg. Co.

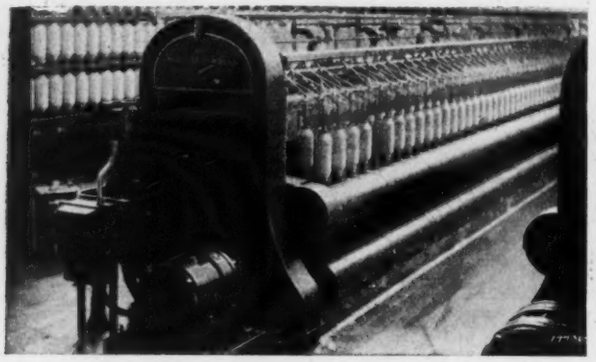
drive can and will deliver power at a fixed ratio.

A properly designed belt has been manufactured with its cords under a high tension to prevent stretch after it is put into service, therefore there is no necessity to adjust the belt tension periodically throughout its life. When new belts are placed in service it is advisable to inspect them and if necessary adjust the tension after the first period of operation since new belts ride slightly higher in the pulley grooves than belts which have been broken in. This seating in the grooves naturally allows a little slack which should be removed. After this adjustment the drive will run at fixed speed without need for further take up.

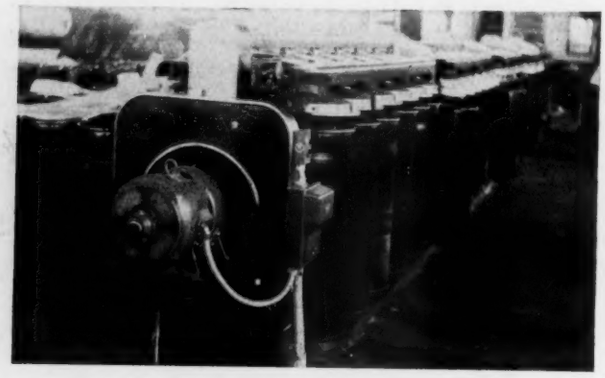


—on twisters in a southern mill.
Courtesy, Allis-Chalmers Mfg. Co.

economical. For individual drives the motor may be set on slide rails on the floor without a cast iron motor bracket. There is not a need of a rigid and accurate alignment. For motors driving lineshafts provision must be made to get the endless belts over the shaft. This may be done by placing the drive near the end of the shaft so that belts may be passed through the bearing hanger or a plate coupling may be introduced adjacent to the drive and belts may be passed through the coupling. In every case it is advisable to mount the motor on an adjustable base. This permits the belts to be put on easily and allows for adjusting the tension after the preliminary settling into the grooves.



—on roving frames at Malvern, Ark.
Courtesy, Westinghouse Elec. & Mfg. Co.



—on drawing frames at Malvern, Ark.
Courtesy, Westinghouse Elec. & Mfg. Co.

It is well known that heat is very destructive to articles made of rubber. For this reason it is necessary to design V-Belts which will operate with a minimum generation of heat. The greatest source of heat is internal friction just as it is with an automobile tire. There are two causes for distortion or internal friction in a V-Belt. The first is bending and straightening the belt as it passes around the pulleys, the second is the tendency for the belt to be crushed into the groove by the driving tension.

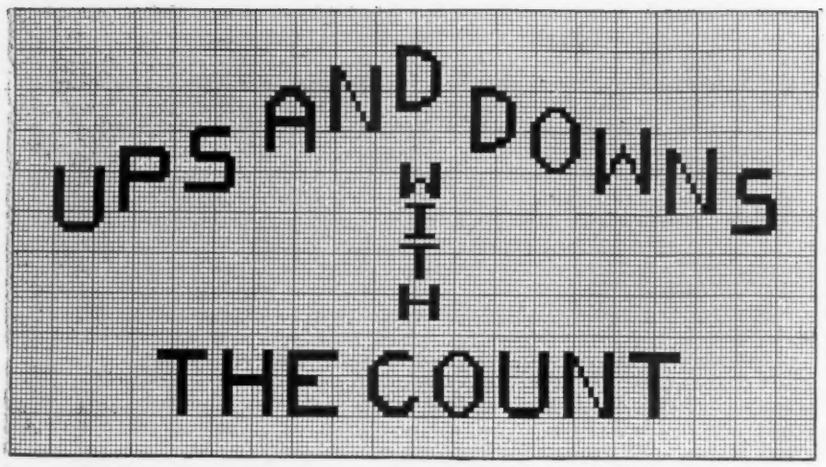
A belt operating on a typical spinning frame drive will run over a pulley, 1,500 times per minute which means 1,500 cycles of distortion and release from distortion. It is evident that every measure must be taken to reduce the amount of distortion in each of these cycles to prevent destructive heating.

The installation of a V-Belt drive is simple and

One interesting feature of the V-Belt drive is that of cushioned starting. Frames with long cylinders and heavy spindles require a relatively heavy torque to start them and by means of the V-Belt drive they may be started without a harsh jerk which might be destructive.

Maintenance of V-Belts is extremely simple. They must not be oiled and the saving of oil and oiling reduces the cost of operation. All that is required is what every well managed plant provides anyway—periodic inspection to see that machinery and equipment is in good operating condition.

At the present time there is a decided trend toward individual drive for all kinds of machinery and the V-Belt drive is one with characteristics which are well suited to these applications. There is, therefore, a widening of the choice offered to users of power.



Fourth of a Series of Articles on Textile Designing

THIS FOURTH article continues the series on textile designing, taking up twills, plain, fancy and novelty. Clippings of previous installments, when available, will be furnished upon request. Also, the author will be glad to answer any specific problems pertaining to designing which may be submitted by readers.—THE EDITOR.

Twill Weaves.

What of twills? Next door to the plain weave lives the common twill, "twillus vulgaris" Nero used to call it when he had Poppaea Sabina bring him his golf breeches. Like your life and my own it starts out very simply and in a straight line, but it later becomes so involved as to be almost unrecognizable to its parents. If a twill weave is made on a number of ends per inch (sley) exactly equal to the number of picks per inch (pickage) it forms a line of weave at exactly a 45-degree angle with both warp and filling threads. As in other weaves, the description is of the action of warp ends. In the common twill, the second end on the second pick, the third end on the third pick, etc., weave like the first end on the first pick. The description starts with the first end on the bottom pick of the design. We start common right-hand twills in the lower left-hand corner of the design.

Do not let this confuse you with the statement that the first pick of a design or a chain plan is at the top. This method of construction is peculiar to the twills. It should never cause any confusion to a designer except possibly, as in this case, when one designer is trying to tell another one how to proceed in making a design. First we decide what weave we will use; that is, how many ends up and how many ends down on the bottom pick. Another way of saying this is how many picks the first end raised is over and how many picks it is lowered under. Whichever way you look at it, the result is the same and is described as so many up and so many down. A common or straight twill always repeats on the same number of ends as it does picks and this number is arrived at by adding together all of the numerals describing how many up and how many down. To illustrate, refer to Fig. 5. This is a 1 up and 3 down, right-hand twill, and is written by designers: 1/3 R.H. Twill. This figure shows two repeats of warp and filling. We see that it repeats on 4 ends and 4 picks because we get 4 by adding 1 and 3. Fig. 6-A is a 3/1 R.H. Twill, and Fig. 6-B is a 2 up and 1 down, 1 up and 1 down R.H. Twill and is written 2/1, 1/1 R.H. Twill. By adding the numerals we find it repeating on 5 ends and 3 picks. Remember that filled-in squares mean warp ends are raised. When we have more filled than empty squares, or when the sum of the numerals above the line exceeds the sum

FIG. 5

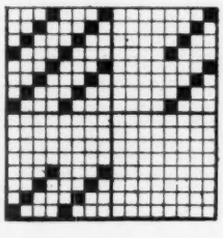


FIG. 6 A

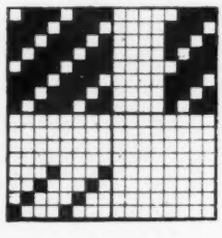
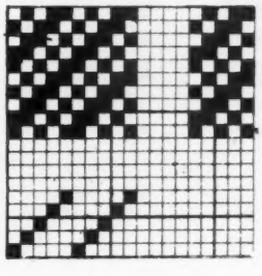


FIG. 6 B



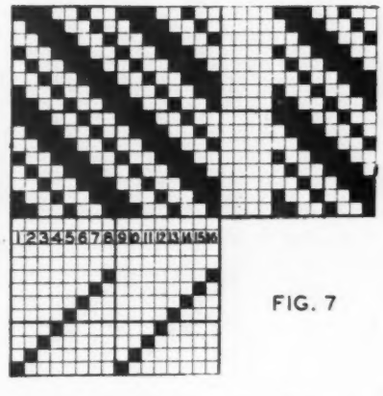


FIG. 7

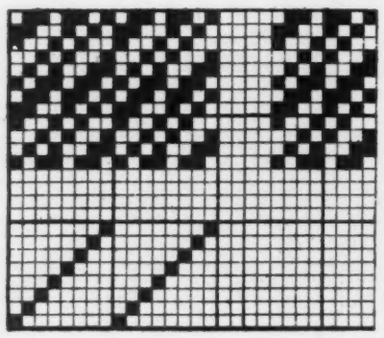


FIG. 8 A

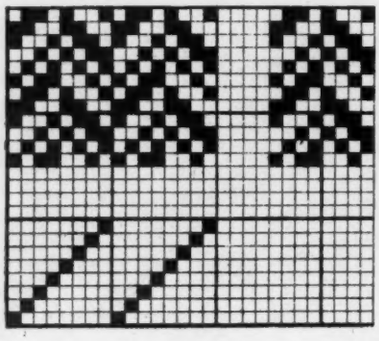


FIG. 8 B

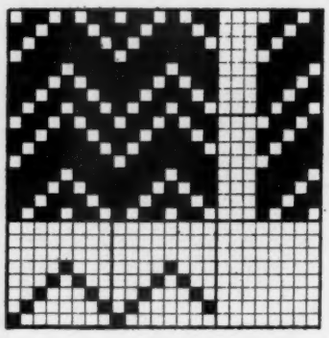


FIG. 9

of the numerals below the line we call it "warp flush." If the reverse is true we call it "filling flush." If both are equal we call it "balanced." Thus we call Fig. 5 "filling flush," Fig. 6-A and 6-B "warp flush," and Fig. 7, Fig. 8-A and Fig. 8-B "balanced." Now Fig. 7 is a 3/2, 1/2 L.H. (left hand) Twill. We designate twills as right or left hand depending on whether the twill line goes up to the designer's right or left. We start left-hand twills in the lower right hand corner of the design. The other rules about common twills apply to it as well as to right-hand twills.

Constructing Common Twills.

After we decide what twill we will use, we paint in this weave on the first end on the left if it is right hand, and the first end on the right if it is left hand. In either case we start on the bottom pick. Then on the second end, we move each raiser and each sinker up one pick. This will readily be seen from the figures shown. You should immediately mark off the number of squares of design paper you are going to use in your design; then when you have a raiser that would come on the first pick *beyond* the design, you put it on the first pick *of* the design (the bottom pick). Why? Because this first pick beyond the design starts a new repeat, and the first pick of any repeat is exactly like the first pick of any other repeat, remember? Also, when the twill line runs out on one side of the design we bring it in on the first end on the other side and on the same pick. This, too, is because all repeats are exactly like all other repeats.

Another interesting thing about twills is that in a full repeat or a number of repeats we have exactly the same number of raisers on every end and every pick. Beginners will find this a useful way to check the accuracy of their designs.

Fancy and Novelty Twills.

If you will refer to Fig. 8-A, you will find a broken twill. This means that at a certain arbitrary point we break the weave. By breaking the weave, we mean that two adjacent threads are made to weave exactly opposite to each, raisers on one being next to sinkers on the other. This applies either to ends or picks. In this case it applies to ends. The weave in Fig. 8-A is a 1/2, 2/1, R.H. Broken Twill, made to break after every fourth end. The effect of this design can best be seen by looking at it from one corner on a diagonal line. Any number of ends may be put into a section between breaks. In making broken twills it is important to see that you have an exact number of repeats; the repeats can be told by the drawing-in draft.

FIG. 10

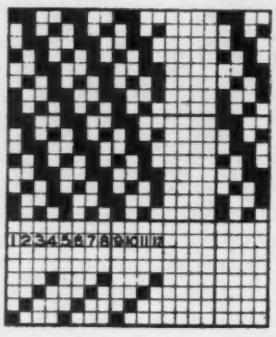


FIG. 11 A

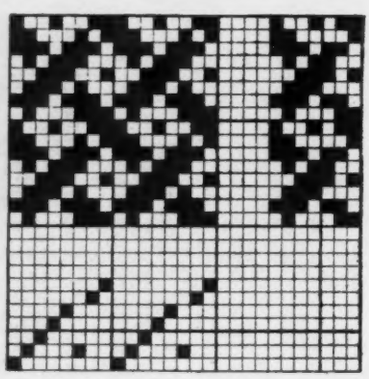


Fig. 8-B is similar to 8-A except that the former is a "broken reverse" twill. That means that we have a break between sections but that the twill is right-hand in one section and left-hand in the next. No other comment should be necessary after studying the design.

Figure 9 shows a pointed twill, a weave that is very much used. It is also called a herringbone in some sections. This particular weave is described as a 4/1, 2/1 pointed twill, pointing on every 4th end. This design points on the 1st, 5th, 9th, and 13th ends. These twills are made by combining right and left-hand twills in such a fashion as to make a point on the end where they come together. All of this is readily seen from

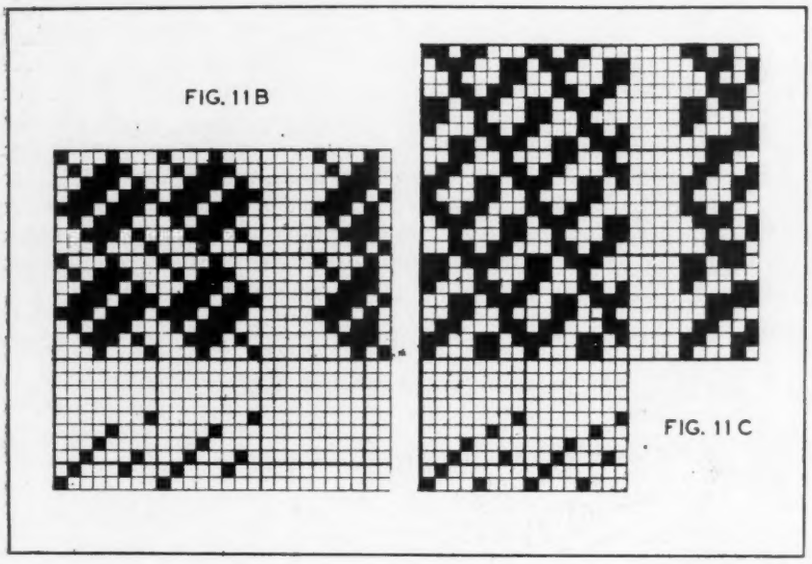


FIG. 11B FIG. 11C

the design in Fig. 9.

Fig. 10 is an example of "steep" twills. This means that the twill line is steeper than in the common twills. There are steep twills of almost any degree, but since they are all made on the same plan, only one example is given here. Steep twills are made by skipping ends on a common twill weave. Fig. 10 is made by skipping ends on the weave in Fig. 7. For this reason, the ends in Fig. 7 and Fig. 10 have been numbered. We have taken the odd ends in Fig. 7 and have skipped the even ends. Thus No. 1 in Fig. 7 remains end No. 1 in Fig. 10, but end No. 3 in Fig. 7 becomes end No. 2 in Fig. 10, end No. 5 becomes end No. 3, etc.

The ends may be left out by any desired method and the angle of the twill changed accordingly. You may leave out every third end or take every fourth, or any other method you may care to select. Some very interesting results are obtained. Try some variations yourself on the weave in Fig. 7.

Figs. 11-A, B and C show "interlacing twills" or, generally, "novelty" twills. You will note that the lines of twill appear to intersect or to interlace with each other. This effect is produced by filling alternate sections with right and left hand twill or by any other plan whereby you combine various twills to get novelty effects. Very often additional raisers are added to the regular twill lines in order to improve the appearance of the design. These additional raisers may be put in anywhere, and there is all the way round quite a lot of freedom in constructing novelty twills. The three shown are only typical designs.

Fig. 12 shows a curved twill made by combining common twill and reclining twill. First we will tell you about reclining twills. Just as steep twills are made by "skipping" ends in a common twill, reclining twills are made by "repeating" ends in a common twill. The name, of course, is self-explanatory. The first eighteen ends in Fig. 12 show a good example of such a twill. This is made from a 3/2, 1/1, 1/1, 1/2, R.H. Twill, the design of which would look exactly like the chain plan in Fig. 12 except that we use only eleven of the twelve ends necessary to make a repeat of the common twill of that description. (However, in steep and reclining twills we may use any number of the ends of the basic weave that we desire.) You will notice that the first three ends of Fig. 12 are exactly like harness No. 1, the fourth, fifth, and sixth like harness No. 2, seventh, eighth, and ninth like harness No. 3, the tenth and eleventh like harness No. 4 and so on. The more ends we make weave alike, the more reclining we make the twill line.

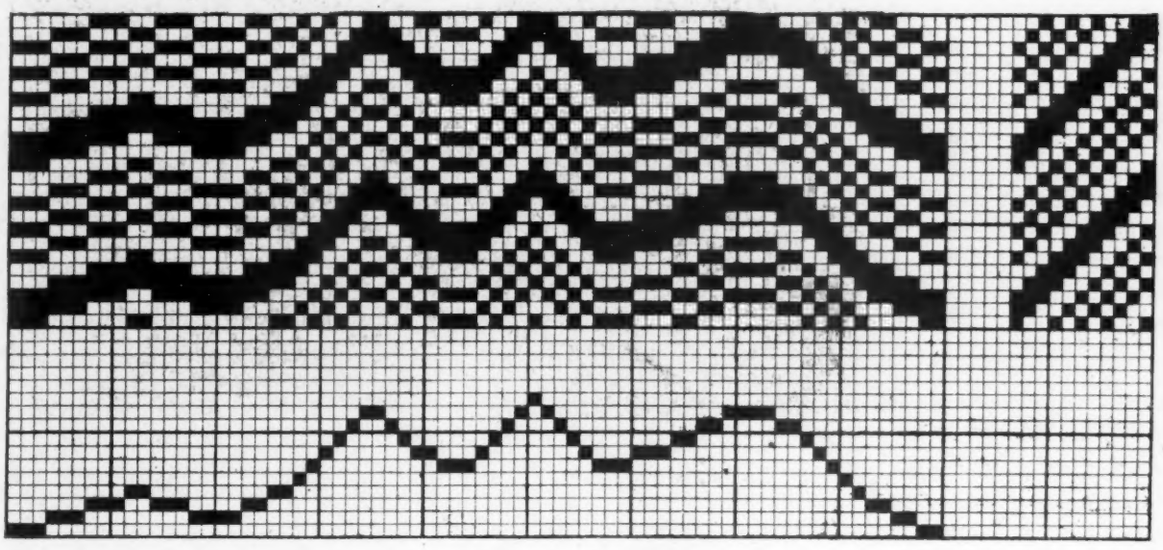
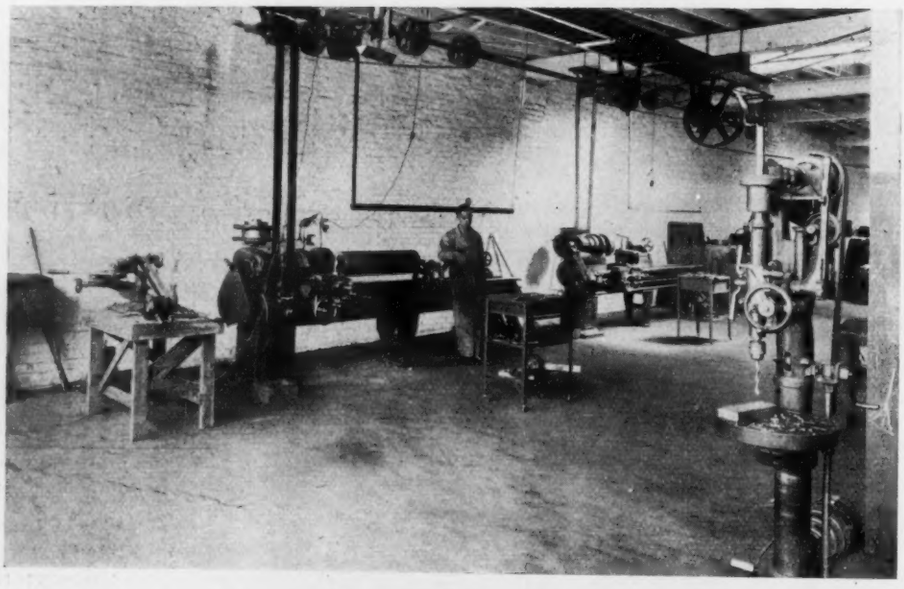


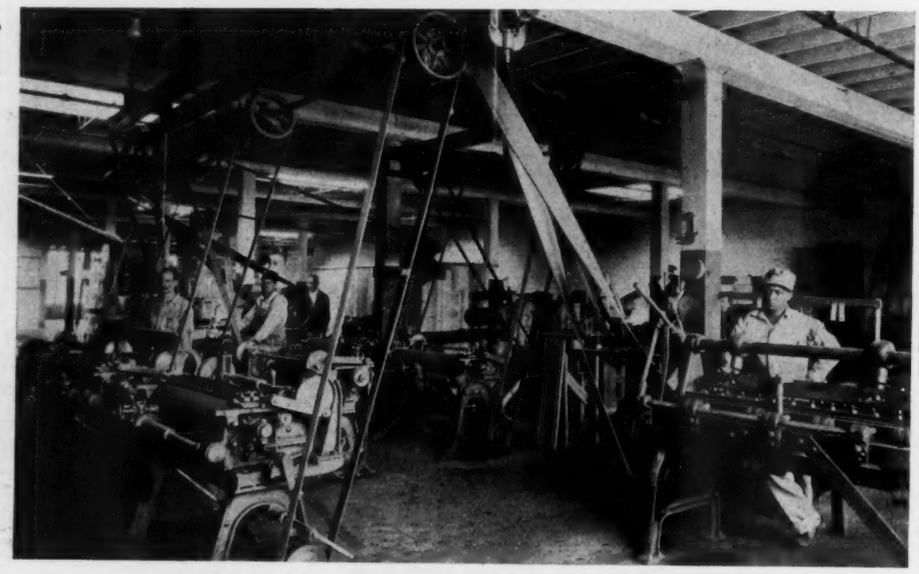
FIG. 12

Curved twills are made by combining common, steep, and reclining twills. Fig. 12 combines only common and reclining. There are several ways of proceeding to make curved twills but the writer's method is as follows: first select the common twill which you wish to use as a basic weave, then make the drawing-in draft and make it curve just like you wish your twill line to curve. Then start your design and make the most conspicuous twill line correspond to the curve of the drawing-in draught. In this case we took the 3 up line at the bottom of the design and painted it all the way across the design. Next, using this as a guide, paint in the other twill lines, all of which must have the same curve. You may make it just as large or small or steep or reclining as you wish, but you must make every end weave according to the common twill you have selected as a base. The design in Fig. 12 shows one repeat of warp and two of filling. In order to get the full effect of a design it is best to paint at least two repeats each way. Look back over the figures given here and see how many repeats each one contains.

A Southern Card Clothing Service Plant



To the left, lathes used in re-covering lickers-in. Below, a section of the plant showing the flat grinders, clothing machines, etc.



The accompanying illustrations show two views in the enlarged quarters now occupied by the southern headquarters of Howard Brothers Manufacturing Company. This plant is located at 244 Forsyth Street, S. W., Atlanta, Ga., and is in charge of Guy L. Melchor. The company has maintained a southern plant in Atlanta for about eight years, but recently conditions made it necessary to move into larger quarters, where the plant now occupies the entire second floor of a building 60 x 135 feet.

Readers will be interested in the character of work done at this plant—mainly re-clothing card flats and re-covering lickers-in.

One view shows a department of the shop equipped with lathes which are used in the licker-in work. The other picture is of the department devoted to re-clothing flats. In this department, there are trimmers for the clothing, machines for putting the clips and end pieces on the clothing, and for fastening the clothing in the flats. The machines shown in the foreground are grinders for grinding the fillet after it is on the flats. Three flats at a time are ground on these machines. In connection with the grinders, there is a testing machine used on each flat for preventing variation in the height of the teeth. This testing machine is gauged to within 1/1000 of an inch. The shop is also equipped with a special machine for grinding the ends of the flats uniform so that they will correspond to the proper curvature on the cards.

CURRENT TOPICS

Talk of Toe Month

INDUSTRY has its progressives and its reactionaries, which is perhaps as salutary in economics as in politics. For the former may be too visionary and in need of a check. Between the two is achieved a conservative change. In the long run we may look back to the present and find that the epochal advance in cotton from a state of over-production, created by the rapid progress of the machine methods, to a new normal of operation was achieved in a comparatively short time. Years do not look so long in retrospect as in prospect.

Whatever the pressure, the reactionaries in cotton manufacture seem to have been finally converted to a new order of things in production and the industry in taking its place in the forefront of those industries which have recognized the need of a radical and permanent readjustment. The propensity of man to fight against change, which is the normal of human affairs, has delayed an adjustment which for several years has been making itself evident as inevitable. But the mind of producers, through the hammering home of the idea for months and even years, seems now to have been adjusted. Therein lies the hope of permanency.

UNDER THE CHANGED CONDITIONS indicated, the cotton industry should get off to a new start and indeed

Legislation and the Industry

country's population. For a recent growth based upon expansion of the resume a healthy tendency toward report of the National Industrial Conference Board stated that "the generally accepted belief that the rate of population growth in the United States is steadily decreasing has been upset by an analysis of the figures of the recent ten-year census." Incidentally, "this fact, in conjunction with the economic importance of accurate population figures," the Board adds, "is the basis of the arguments in favor of an enumeration every five years."

To talk of expansion, in the light of recent experience, may seem premature, but the stunted growth of the industry has been partly due to over-operation. In this connection, a paper in a textile center of Massachusetts, the New Bedford Standard, has some pertinent comment on legislation and textile growth. Coming from a state which has felt the sting of much restrictive legislation on cotton manufacture, it is doubly significant. The comment follows:

National Law "Antique" Proposition

"An antique proposition for a national law fixing hours of labor has popped up as a new discovery, and is receiving some consideration. The trouble with the textile industry at the present time is that production exceeds consumption. If you let the situation alone the natural growth of population will take care of the problem. Cotton mills are not being built at the present time. With a larger population consumption will increase and all will be well in the course of time.

"If the hours of labor in cotton mills are restricted to 48 hours, without night work, it will not be long before consumption catches up with production. Then more mills will be built, to catch up with demand, mill building will be overdone and back will come the problem. The natural law of supply and demand cannot be outwitted by artificial laws designed and passed by congresses and legislatures. At the present time we hear much of protest at interference with state rights. Such a law as is proposed would complicate and increase the evil.

"The restriction of the hours of labor for women and children is somewhat different. That is coming whether or not the Federal Government interferes. It is admitted that the legislatures of North and South Carolina will pass a law the coming winter ending night work in accordance with the recommendation of the Cotton Textile Institute. This will necessitate more spindles and eventually more mills, but that is the law of supply and demand. And we repeat, that law cannot be outwitted by legislation devices."

AMONG THE THINGS STRESSED during the past year is the fact that consumption of goods constantly pro-

Absorption and Consumption

ceeds and that replenishment ultimately must take place. That is one of the half-truths in life. In the past we have heard of cumulative deficiencies in the supply of cotton, for one thing, which "must be made up." The trouble of that theory is that there is no definite quantity of consumption in any direction. What a man wears is governed by his pocket-book. He of course wears clothes all the while, but the "consumption" varies with his circumstances, as is an obvious matter. In a time of depression consequent on low purchasing power, therefore, the consumption of goods decreases and the later absorption of production will not be fully compensated for the loss.

But if deficiencies in absorption of goods over a period are not actually made up, they are counterbalanced by freer consumption in times of prosperity. Thus the overwhelming volume of propaganda for buying, or absorption, of goods throughout the country this last quarter of the year cannot but have been welcome to all producers. It has been steadily borne in upon the consciousness of the country that the way out of depression is through the buying of the public and buying on a scale beyond the bare necessities of life.

Dealing with this matter, as related to the ' 'Buy Now" campaign in Philadelphia, Hayes Robbins asks

Working for a Steady Absorption

the question: "Are efforts to bring this about 'artificial' and therefore of no permanent value?" He then proceeds to the proposition that what is artificial in economics is as difficult to define as "normal" or "natural" in relation to standards of

consumption. And while we may assert safely that fundamentals in economics may not change, he makes the point that "the good old home variety of economics has turned some curious somersaults in the last few decades."

Notable in the way of somersaults we think at once of the change from emphasis upon production to that on distribution and here we come back to consumption, or the ultimate buyer. If we could devise some way, even characterized as artificial, to create a constant buying spirit on the part of the ultimate consumer we should have the solution of the consumption or absorption problem. There would lie the way not only out of depressions but to an alleviation or cure of the cycles. For cycles would grow less or disappear if the buying of products were a more constant operation.

New Considerations for All Employees

NOW NO ONE can conceive of a man not "buying minded," provided he sees no obstacle in the way of getting the things he needs or desires. But the man who is dependent upon others for employment is made cautious especially in times such as we have just been experiencing, about buying even what he could from his earnings. Some men go out of work and stop buying. Others, through fear of losing their positions because of the bad times, curtail their buying as a measure of protection for the future. Industry is forced to curtail and economies become general, but the trouble is that a vicious circle of unemployment is created which aggravates the depression.

Another of the somersaults of recent years is the wage theory in industry, whereby manufacturers admit that scales should be maintained because their reduction means curtailment of buying power in an important branch of the buying public. But prosperity cannot be maintained without the support of the rest of the public. Buying must sag when there is a drop from normal employment of the whole population. Thus the matter of restoring employment has become the paramount economic consideration of all employers and the outstanding problem of the country.

Two Factors for Stability

"THERE ARE TWO FACTORS entirely in the control of the steel industry itself which, regardless of fluctuations in general business, largely determine our success as an industry," says Charles M. Schwab. "One of these is price stability, the other is stability of production." He has expressed the attitude that wages should be maintained and says, "we must get rid of any lack of consideration of the rights of the rank and file of the industry." Yet the steel industry has gone through a time of price-cutting competition in the period of depression, because of the general wave of cautious buying.

Industry in general employs some method of insuring itself against times of depression. The units which do not lay by in times of prosperity are sure to go to the wall later. Individuals also lay by for the future and the time when their earning power is reduced or destroyed. In a rapidly changing economic world, however, there is no power to prevent variations and loss of employment. The individual has not the means to protect himself against such contingencies as arise and some form of protection against unemployment is a growing problem of the country. Thus there is need of a common and co-operative effort among all employers to safeguard the buying power of the country by providing steady work as far as possible and funds to cover temporary unemployment incident to change.

Co-operation on Employment

THAT THIS PROBLEM is recognized as a joint one among some branches of business is exemplified in various industries. The case is cited of three companies in Wisconsin which have a plan whereby one notifies the other two if it has to drop a man. If neither of these has an opening the first employer will try to place him in a job elsewhere; if this effort is unsuccessful, the man receives benefits amounting to 65 per cent of his average income during the preceding year, taking effect after he has been idle for two weeks, and continuing for 100 working days thereafter —unless he gets work sooner.

More Control on Merchandising

FROM ANOTHER SOURCE we hear the suggestion that the Sherman Anti-Trust Act, created to protect the little fellow, be amended to protect the big fellow from the little fellow. Here again is one of the 20th century somersaults, with the large manufacturing units suffering from the uneconomic practices of the shoe-string concerns. So long as the archaic attitude of the government is allowed to obtain, the stabilization efforts of the responsible units of industry apparently will go for naught in times of stress.

Along with this obstacle, the cotton manufacturer also is confronted with the growth of mercantile abuses. We suggested some time ago that something of a curb on such practices might be put into effect by stabilization of prices by mills, through the aid of regulated production. This idea is supported now in the market reports which assert that this is the first essential for influencing mercantile abuses. These same abuses are an underlying reason for the furtherance of the consolidation of mills into strong groups for marketing if not production. The mills must meet concentration of buying with concentration of selling, to secure their position in catering to the needs of the ultimate consumer.

New Ideas in Construction

MUCH TALK has been made in realty circles in recent years of revolutionary idea in construction and among them has been a plan for windowless buildings. It will interest all manufacturers to know that this proposition is to be put to a practical test by an industrial concern, the Simonds Saw & Steel Company, at Fitchburg, Mass. It is contended that the building can be more scientifically illuminated and ventilated without windows or skylights than by time-old methods of construction. The Simonds plant is calculated to provide "scientifically ideal working conditions for employees." The results will be worth observing.

Moisture Regain for Tire Fabrics Determined.

Method of Calibrating Testing Machine Set.

THE MATTER of moisture regain in tire fabrics—woven and on cones—was disposed of at a meeting of the standardization committee of tire and fabric manufacturers, in Boston, on October 15th. This difficult and perplexing problem was definitely and unanimously settled.

The committee has covered the whole subject very thoroughly, establishing a maximum standard of 6½ per cent for allowable moisture regain covering deliveries over a period of a year, together with a tolerance up to 7 per cent for individual shipments. Procedure covering method of figuring rebate for excess moisture, etc., is also covered, as is a standard method for taking samples for moisture regain test and for determining the moisture regain present. All of this work has been based on actual data obtained by various members of the committee during the past several months, including northern and southern mills. These figures may be secured from the chairman of the committee, K. B. Cook, of Manville-Jenckes Co., Pawtucket, R. I. The other members of the committee are:

E. C. Gwaltney, Morgan Cotton Mills; F. Pieraccini, Tire Fabric Corp.; L. A. Graybill, Bibb Mfg. Co.; C. B. Finckel, J. H. Lane & Co.; A. E. Jury, Winnsboro Mills; R. H. Adams, Callaway Mills; M. Castricum, Fisk Rubber Co.; C. G. Miller, McClaren Rubber Co.; B. H. Foster, U. S. Rubber Co.; F. Kovacs, Seiberling Rubber Co.; W. R. Marsden, Kelly-Springfield Tire Co.; H. C. Hebden, B. F. Goodrich Rubber Co.; W. A. Karl, Firestone Tire & Rubber Co.; and S. A. Steere, Goodyear Tire & Rubber Co.

A standard method of calibrating a cord testing machine was also adopted by the committee.

Both of these new procedures represent additions to the Standard Methods of Test for Tire Cord originally adopted by the Committee in June, 1929. Since this time, however, the methods have been enlarged considerably by the Committee, and these methods in their entirety have been adopted by the American Society for Testing Materials, through its Committee D-13. Copies of the complete specifications may be had from the Society, A.S.T.M. designation D 179-30.

The new standards for moisture regain, tolerances, methods of testing, etc., follow:

I MOISTURE REGAIN

Tolerances

1. (a) *Moisture Regain Yearly Average.* The average moisture regain determined by test shall not exceed 6½ per cent when based on results covering a twelve month period, said 6½ per cent constituting a yearly average maximum standard.

Should the moisture regain over this period average in excess of 6½ per cent, adjustment for the entire deliveries at the end of this period shall be made back to the 6½ per cent standard basis.

(b) *Moisture Regain Individual Shipments.* The average moisture regain of an individual shipment shall not exceed 7 per cent. Any individual shipment containing more than 7 per cent moisture regain shall immediately be adjusted back to the 6½ per cent standard basis.

(c) *Reporting of Tests.* Provision shall be made between consumer and producer for reporting of test results at the end of each month for material tested during that month, in order that each party may make whatever corrections are necessary and for the purpose of simplifying records in anticipation of any adjustment that may be made at the end of the twelve months period. Monthly records shall be based on amounts of material invoiced during that month, rather than on amounts actually received.

(d) *Tests Corrected to Invoice Weight.* All moisture regain tests shall be corrected to the invoiced weight of the roll or cones from which the tests are made, and these corrected moisture regain figures shall be the results reported and shall constitute the basis on which any adjustment may be made.

(e) *Adjustments*—Adjustment shall take into consideration the amount of material invoiced during the month with the corrected moisture regain for that month by dividing the invoice weight by one hundred plus the corrected moisture regain, and multiplying the result by 1.065. The difference between this figure and the invoice weight shall represent the amount of overweight or underweight as the case may be. If the total for the twelve months shows a weight in excess of the total invoice weight for this period, this amount shall represent the claim to be adjusted as excess moisture for the twelve month period.

Methods of Testing

2. (a) *Number of Tests.* On woven fabrics or on cones, not less than one moisture regain test shall be made for each 6000 lbs. of material per style.

(b) *How Taken.* On woven fabric, a small sample weighing approximately 20 grams shall be cut from the outside of the roll at least twelve inches in from the selvage on the same day the fabric is received or within 24 hours and placed immediately in an airtight container which has been kept in a desiccator. After the roll has been run through a similar sample shall be cut from the inside end. In the case of cord on cones, a small skein weighing approximately 20 grams shall be reeled from the outside of the cone on the same day the cord is received or within 24 hours and placed immediately in an airtight container which has been kept in a desiccator.

(c) *Test Procedure—Preferred Method.* The sample of material cut as described above in Section 2-B shall be weighed immediately on a scale or balance sensitive to 0.1 per cent of the total weight. After weighing, the sample shall be removed from the container which is returned to the desiccator and placed in a ventilated drying oven maintained at a temperature of from 100 to 110°C. (212 to 230°F.)—and dried to constant weight as determined by two consecutive weighings without removal from the oven, to be taken not less than ten minutes apart, and showing a further loss of not more than 0.1 per cent from the previous weighing. The bone dry sample shall then be placed again in the container and allowed to cool for a half hour in the desiccator before being weighed. The difference between the normal net weight of the sample and the dry weight, expressed as a percentage of the dry weight, shall be the moisture regain of the material.

Note: The above is the preferred method to be used in case of dispute, but any other method satisfactory to both parties giving results comparable to this preferred method may be used for routine work.

(d) *Moisture Regain Corrected to Invoice Weight.* On woven fabrics the average of the tests made from the outside and inside ends of the roll, shall be the average moisture regain of the roll. In the case of cord on cones, the test made from the outside shall represent the average moisture regain of the cone.

These average moisture regain tests shall be corrected to invoice weight of the material as follows:

$$\frac{\text{Receiving Weight of Roll}}{\text{100 plus Moisture Regain}} = \text{Theoretical Dry Weight of Roll}$$

$$\frac{\text{Invoice Wt. of Roll}}{\text{Dry Wt. of Roll}} \text{ minus } 100 = \text{Per Cent Moisture Regain Corrected to Invoice Wt.}$$

Example:

Invoice weight	552 lbs.
Receiving weight	550 lbs.
Regain on Test	6.40%

$$\frac{550}{1.064} = 516.9 \text{ Theoretical Dry Weight}$$

$$\frac{552}{516.9} = 1.0679$$

$$1.0679 - 1.00 = .0679 = 6.79\% \text{ Regain Corrected to Invoice Weight.}$$

II STANDARD METHOD OF CALIBRATING CORD TESTING MACHINE

3. (a) *Zero Position*—First remove the upper jaw, upper jaw chains, cord and counter weight and the chain which operates recording mechanism. Then lift pawls (but do not put on brake) and allow head to come to rest. Set pointer at zero and screw tightly into place and replace upper jaw, upper jaw chain, cord and counter weight and the chain which operates recording mechanism.

Again lift pawls (but do not put on brake) and allow head to come to rest. Attach sufficient weight to recording mechanism to overcome all frictional resistance with pen riding on chart. Then attach sufficiently heavy counter weight to upper jaw to bring machine at rest with pointer at zero. The machine is now properly set at the zero position and none of the above adjustments are to be changed.

(b) Calibration—A specially designed calibration apparatus which may be obtained from the machine manufacturer shall be used for this purpose. The lower jaw of the testing machine is first removed and in its place is screwed a small plate or supporting stud. The lower jaw is then screwed into place in the initial calibration weight of the apparatus which weighs exactly six pounds including the jaw. The machine is then thrown into gear in order that it may support this initial weight which is placed on the supporting stud. The distance between jaws shall then be set at 10 inches between nips, and a cord similar to the material about to be tested shall be inserted in the jaws in the usual manner. When the supporting stud drops far enough, the calibration weight will be suspended on the upper jaw and the pointer should show six pounds, and the pen should indicate six pounds on the chart.

Repeat this at different loads by adding additional calibration weights to the initial piece using a new strand of cord with each calibration. Calibration weights of two pounds each should be provided up to a total capacity of at least twenty pounds, together with a single one pound weight for odd number calibrations.

Any error shown by this check should be a progressively increasing one at from six to twenty pounds and should be corrected by turning the adjusting screws on the pendulum either in or out until readings at all points are correct. Any error that does not progressively increase indicates an incorrect balance between counter weights when checking at the zero position.

What the Southern Mills are Doing

CONTRACTS for textile machinery for a 15,000-spindle yarn mill addition to the duck mill of the U. S. Penitentiary, Atlanta, Ga., were recently let. The following equipment has been contracted for: opening and picking, Whitin Machine Works and Centrif-Air Machine Co.; cards and drawing frames, Saco-Lowell Shops; fly frames, Woonsocket Machine and Press Co.; spinning frames, H & B American Machine Co.; winders, Foster Machine Co.; card strippers, Abington Textile Machinery Co. Other auxiliary equipment contracts are to be let later. Robert & Co., Inc., Atlanta, Ga., are the engineers.

It was recently announced that the Stark plant, Hogansville, Ga., which is one of the Callaway group of mills, had started the construction of a slasher room addition to their plant. It is understood that the factory, which has heretofore manufactured yarn and heavy duck, will be adapted to the manufacture of sheeting. New Draper looms have been purchased.

American Cotton Mills, Inc., Plant No. 1, Bessemer City, N. C., have installed three winders and will install another shortly, they state. They are changing from tire fabrics to yarn.

The machinery of the Southeastern Bleach & Dye Works, Salisbury, N. C., is being dismantled. Part of it is to be shipped to the Rossville, Ga., plant of the Standard-Coosa-Thatcher Co., and part to the Arkray Mills, of Gastonia, N. C.

Spartan Mills, Spartanburg, S. C., have ordered 17,000 long draft type spindles from Saco-Lowell Shops to be used for replacements.

Alabama Polytechnic Institute, Auburn, Ala., is installing a combination skein and package "Hurricane" dryer. This machine is manufactured by Philadelphia Drying Machinery Co., of Philadelphia, and was sold through the Carolina Specialty Co., of Charlotte, N. C.

A new rayon wearing apparel manufacturing plant has been opened in Americus, Ga., in the building of the old Americus Rayon Mills. New machinery has been installed. J. H. Chason is president of the new concern, which will be known as American Manufacturing Co.

Cramerton Mills, Inc., Cramerton, N. C., have recently installed 4 additional Sipp-Eastwood horizontal swiss warpers. They were purchased through the Carolina Specialty Co.

Spencer Love and associates of Burlington, N. C., recently purchased the Pinehurst Silk Mills in Hemp, N. C. More looms have been ordered to add to the 96 now in operation, The number of employees is now 100 but this number is expected to be increased by two-thirds by the Christmas holidays. The output should then be well over 65,000 yards of woven goods, consisting of rayon dress goods, crepes, spreads, draperies, etc., per week.

H. & B. American Machinery Co. is to install a number of new spinning frames equipped with the 4-roll long draft system at the spinning mill of the P. H. Hanes Knitting Mills.

The Gastonia (N. C.) Thread Yarn Mills have recently equipped their mills with oil spraying equipment, which was furnished by Borne Scrymser Co., of New York. The Arkray Mills, also of Gastonia, equipped their mills with the same equipment.

Sterling Overall Co., Hickory, N. C., will move into the building formerly occupied by Hollar Hosiery Co. in order to double its capacity. When installed in their new quarters, production will be raised to at least 1800 dozen pairs per month.

Dunean Mills, Greenville, S. C., recently installed additional double deck Sipp-Eastwood winders with the new oil-less bearings. These machines were purchased through the Carolina Specialty Co.

It was recently reported that the new addition to the American Glanzstoff Corp., Elizabethton, Tenn., will be completed by the end of the year.

It has been reported that Cumberland Silk Mills, Rockwood, Tenn., are installing five carloads of machines in their new plant.

Ray-Ser Dyeing Co., Chattanooga, Tenn., are installing new twisting machinery for production of ply rayon yarns and combination yarns of rayon, silk, cotton, acetate and worsted. More winders are to be added soon, the company states.

Waxahachie Cotton Mills Co., Waxahachie, Texas, is being overhauled and dyeing machinery installed. The product of the plant will be changed from single filling flat duck to denims and colored fabrics for work clothing. A. Culberson is in charge.

New England Mill Situation

November 18, 1930.

NEW ENGLAND fine goods mills have enjoyed most satisfactory business from a yardage standpoint during the past fortnight, although the prices at which staple fine cotton goods and many rayon and silk-and-cotton fabrics have sold have been on the same low basis or at times at further concessions. Curtailments have continued effective in the fine goods industry, but still there are no signs of shortage of merchandise except on a few cloths of unimpressive volume. Meantime competition for contract business has been such as to result in sales at or considerably below cost.

Better Trade Conditions Prevalent.

Such competition has made it necessary for mills to seek a way out and the current method seems to be that of a vertical merger of effort whereby cloths of established merit, even standard and staple constructions, are confined to one or two distributors. Such transactions have been quietly put through, mills agreeing to confine a particular style of cotton voile or other fabric to a single converter

who agrees to take 10,000 or 20,000 pieces of the goods over a definite period of time. Such business seems generally to have been taken at a low contract level, but some mills have found it more satisfactory than the disorganized selling of small lots, and they are further able to get a premium from the converter's competitors, or to sell goods to the converter that his competitor may secure finished from him alone.

Meantime a better trade in fancies has been coming forward, and the trade outlining its campaigns to future seasons seems to show a definite trend toward all cotton fancies. New all-combed Jacquard fabrics are being talked of for the higher priced dress goods trade. Shirtings tend to more in the way of cotton fancies and less in the direction of rayon decorated fabrics. Stocks of finished goods are reported lower in most directions, so that mills are hopeful of a change for the better after the first of the year. Sacrificing of finished clipped spot curtain goods and some other stuffs by large holders seeking to reduce their inventories at any cost are said to bar much business in such cloths for some weeks to come, but this is one of the few divisions of the fine goods market where an unsatisfactory finished goods condition rules.

Some eastern organizations, meantime, have been able to meet very low priced competition which the market has suffered at the hands of small silk weavers in New Jersey, Pennsylvania, and elsewhere, who have been running on all-rayon goods. Still, rayon goods have slowed up considerably, and the feeling that readjustments of prices might be forthcoming before long has resulted in reduction of rayon yarn stocks of mills and a tendency to operate from week to week.

Newman is Planning Another Merger.

Recommendation of directors urging the sale of a New Bedford and a Fall River mill to Jerome A. Newman has been one of the month's developments. Mr. Newman has previously figured in attempts to merge New England mills, having been connected with the Bancamerica-Blair Corporation's merger plan of last spring and is still seeking to organize a merger in New England. Mr. Newman has offered $39 per share for the Bristol Manufacturing Company's mill at New Bedford, and $46 per share for controlling interest in the Flint Mill, Fall River. William H. Jennings, president of the Flint Corporation, announced the tentative offer which directors have recommended and which has been submitted to the stockholders.

The Bristol offer is a cash proposition for as much stock as may be deposited by November 22, with minimum of 6,666 shares desired, although privilege of extension to December 2 and of acceptance of a lesser amount of stock is reserved by Mr. Newman. The mill has been steadily losing money, according to the letter sent to stockholders. For the Flint Mill the original offer was $40, but was advanced to $47 and then reduced to $46 on payment of $1 per share dividend after the higher offer was made. Surplus was reported at about $42.75 per share, with sums also due on tax abatement. Dividends paid during the year were $51,980. Officers of the Flint were reelected, J. Whitney Bowen being treasurer.

Notes about Individual Mills.

Mr. Bowen, treasurer of the Flint Mill, has since been elected president of General Cotton Corporation, the stabilizing and balancing corporation for the fine goods industry which recently acquired the Lincoln and David mills in Fall River.

Three or four other eastern mills are reported interested in the Newman merger plan, although no recommendations have yet come about.

The annual meeting of the Union Cotton Manufacturing Company of Fall River, which is in process of liquidation, was held during the month. Net quick assets were placed at $262,462.44. During the year payment of 4½ per cent, $54,000 in regular dividends, and 16½ per cent, $198,000, in liquidation dividends has taken place. Edward L. Hinchey was re-elected clerk and treasurer.

Annual meeting of Stevens Manufacturing Company, Fall River was held, showing surplus in quick assets over liabilities of $376,865.43 as against $480,692.41 a year ago. Two quarterly dividends of 1½ per cent, $36,000, were paid during the year. G. Hinsdale was elected to succeed the late Joseph A. Conroy on the board of directors, no other changes appearing.

Annual meeting of Merchants Manufacturing Company, of which Jerome A. Newman is treasurer, was held, with all officers re-elected except that Ricardo Miret declined re-election to the board and I. C. Blenderman was named to succeed him. Payment of 40 per cent in dividends during the year through disposition of the bulk of machinery in the main plant was reported. Expectation of re-opening of the Crescent unit shortly was contemplated.

Luther Manufacturing Company held its annual meeting and reported reduction in capital stock from $525,000 to $350,000 through retirement of 1750 shares at par. Dividends of 8 per cent on present capital were paid during the year. William H. Jennings presided and John H. Holt submitted the treasurer's report. Surplus as of September 27 was $335,119. All officers were re-elected.

Directors of Narragansett Mills met. Edward S. Adams, M. B. Horton, and Oliver K. Hawes declined re-election to the board, and G. E. Brown, C. S. Waring, Isaac A. Brown, Frank B. Williams, M. R. Brown, and William C. Harrison were elected. Mr. Harrison was named clerk and treasurer. Quick assets of $40,854 and fixed assets of $479,313 were reported, with current liabilities, all taxes, of $108,653. Abatement is being sought.

Charles N. Borden declined re-election as clerk and treasurer of Richard Borden Manufacturing Company, Fall River, and Vernon L. Faulkner, superintendent, was elected to succeed him. He continues also as superintendent, without additional salary. Only one mill is now in operation. Mr. Borden declined re-election as a director also. R. P. Borden, Allen B. Clarke, both re-elected, and C. M. Gardiner, Vernon L. Faulkner, and Prescott Jennings make up the new board. Some money has been lost by the mill, sales averaging only 28,726 pounds of cloth monthly for the last six months, with 426 looms active the first half and 226 for the last half of the fiscal year.

Treasurer Paul Gifford of the Bourne Mill reported the mill running nearly full and showing a little profit, with orders booked to insure running beyond the end of this year. The mill early in the year seriously considered liquidation. Surplus is about $260,000, a shrinkage of $40,000, ascribed to reduction of inventory and costs of a strike early in the year.

Lower taxes in New Bedford were cited during the month. In six years from 1924 to 1930 there has been a decrease in mill taxes paid the city of $1,039,233.44, with per spindle assessment reduced from average of $25.93 to $17.06. Closing of Fairhaven, Manomet, and Sharp mills has only partially been offset by the tire mills and rayon company.

The Firestone Cotton Mills in Newburyport, Mass., are slowing down production and a shutdown is believed to be impending.

York Installing New Equipment.

Operations will start in the York Mills in Biddeford, Me., as soon as installation of $700,000 worth of new machinery is installed. Bower Manufacturing Company there is running six days and six nights per week on blankets, with large orders reported booked ahead for this Lewiston, Me., concern.

Grieco Brothers Company, men's wear manufacturers; Sampson-Crane Co., wholesale clothing distributors; Gilbert Shoe Company and Court Heel, Inc.; Henry Bauer, silk and rayon corset cloth manufacturer; and Gill-Stephenson Co., textile machinery rebuilder; Sterling Silk Underwear Company, formerly of Newark, N. J., and three other shoe and novelty concerns are now housed in the old Pemberton Mill structure in Lawrence, Mass.

Total liquidation dividend paid Tremont and Suffolk

Mills stockholders amount to $35.10 per share including final dividend of $6.10 recently paid. Fixed asset were sold to Nashua Manufacturing Co., in December, 1926, for $500,000, liquidation of inventory and receivables following.

Contract has been let for the razing of some structures and erection of a new building for the Sayles Finishing Plants, Inc., Saylesville, R. I., on the same site as their Glenlyon Dye Works plant. The new structure is a four-story steel and brick building 75 by 175 feet for singeing and bleaching equipment, gray room, bale storage, and finished goods storage. Building may be lengthened later. The contract has been awarded Temple A. Crane, Inc., Boston.

Several meetings under the auspices of the National Association of Finishers of Cotton Fabrics have been held during the month in New England and New York. At an initial meeting of job and corporation printers at Providence, R. I., steps were taken to eliminate current selling below cost through cooperative effort of some 95 per cent of the country's printers who attended or were represented. The same group met later in New York and committees were named to further the plan. Two other meetings were held in New York, one of the cotton fabrics finishing group and another of the rayon fabrics finishers. Subsequent meetings are planned North and South, and organization of the finishing industry on a more profitable basis is foreseen as a result.

Cotton Comment

New Orleans, November 17, 1930.

DURING the first half of the period under review the trend of the cotton market continued upward until the close of October; due to short covering and improvement in the domestic cotton textile situation, contract values showing a recovery from the low for thus far this season of about $7.40 to $8.00 per bale. Thereafter liquidation set in, influenced partly by the recent further depression in the New York stock market and in wheat, values experiencing a sharp downward reaction, but bulged moderately again, only to ease off once more. However, finals for the period show about $3.40 to $4.05 per bale compared with one month ago.

Sustaining features of the market were the better demand for cotton goods, a fairly good demand for spots, smaller ginnings to November 1st than generally expected, a slight reduction, instead of an expected increase in the government's cotton crop forecast, and the somewhat more cheerful feeling of late in Wall Street.

Based upon Secretary Hester's carry-over figures and the latest of government crop forecasts, the world's indicated supply of American cotton for this season, exclusive of linters, is about as follows:

	Bales	
	This season	Last season
World's carry-over, August 1st	5,939,000	4,395,000
Indicated crop, as of November 1st	14,438,000	14,828,000
Indicated supply	20,377,000	19,223,000
Middling in New Orleans today	10.72	17.25

ASSOCIATION OF COTTON TEXTILE MERCHANTS OF NEW YORK OCTOBER STATISTICS

Yards—	October 5 weeks 1930	September 4 weeks 1930	October 4 weeks 1929
Production	228,866,000	182,385,000	283,064,000
Sales	335,801,000	291,980,000	222,196,000
Shipments	270,383,000	232,975,000	265,450,000
Stocks	350,889,000	392,406,000	362,657,000
Unfilled orders	350,845,000	285,427,000	395,698,000

October sales of domestic cotton goods were 146.7 per cent of production against 160.0 per cent in September this year and 78.5 per cent in October last year. Shipments were 118.1 per cent of production against 127.0 in September this year and 93.8 per cent in October last year. Stocks at the end of October decreased 10.6 per cent against a decrease of 11.0 in September this year and an increase of 5 per cent in October last year. Unfilled orders at the end of October increased 22.9 per cent against an increase of 26.0 in September this year and a decrease in October last year of 10.0 per cent.

GOVERNMENT REPORT

As of November 1st—	This year	Last year
Indicated crop, bales of 500 lbs. gross weight	14,438,000	14,828,000
Indicated yield per acre, lbs.	154.2	155.0
Ginned to November 1st, running bales	10,863,601	10,891,940

BRITISH BOARD OF TRADE REPORT FOR OCTOBER

Year—	1930	1929	1928
Exports of yarn, pounds	12,000,000	14,000,000	15,000,000
Exports of cloth, yards	150,000,000	266,000,000	334,000,000

CENSUS REPORT

United States—Bales—	This season	Last season
Consumption during October, lint	444,494	639,759
Consumption, 3 months, lint	1,191,150	1,744,347
Mill stocks, October 31st	1,352,885	1,355,998
Stocks in public storage & whs., Oct. 31st	7,542,596	5,296,077
Stocks in mills, pub. stg. & whs., Oct. 31st	8,895,481	6,652,075
Active spindles during October	26,153,792	30,107,484

TOTAL AVERAGE RAINFALL IN TEXAS

Inches—Year—	1930	1929	1928	Normal
October	6.26	2.55	2.00	2.59
Nov. 1/29 to Oct. 31/30	29.90	31.72	26.86	31.07

Spot sales at reporting Southern markets for week ending November 14th were 207,793 bales compared with 180,325 for corresponding week last year.

Compared with last season, exports from the United States to November 14th, including Canada, were 2,694,036 bales versus 2,720,932.

SPINNERS TAKINGS OF AMERICAN COTTON

Aug. 1st to Nov. 14th— Bales—	This season	Last season
North and Canada	406,000	731,000
South	1,441,000	1,824,000
Foreign Spinners	1,803,000	2,012,000
Total mill takings	3,650,000	4,567,000

WORLD'S VISIBLE SUPPLY OF COTTON NOV. 14 COMPARED WITH SAME DAY LAST YEAR

Bales—	This year	Last year
Other kinds	1,867,000	1,752,000
American	7,845,422	6,071,181
All kinds	9,712,422	7,823,181

According to government returns the acreage planted to cotton in India to October 1st was estimated at 20,506,000 acres, versus 20,812,000 to same date last year. Production in Asiatic Russia is estimated to be about 1,950,000 bales of 478 pounds net against 1,351,000 last year. In China production is estimated somewhat larger than last season's 1,752,000 bales of 478 pounds net. In Chosen the production is estimated at 152,000 bales of 478 pounds net versus 138,000 last season. The Mexican crop is not expected to exceed 200,000 bales versus 225,000 last year. The Egyptian crop is estimated at 1,743,000 bales of 478 pounds net, an increase of one per cent.

The fly in the ointment at present is the unsettled situation in Wall Street, but of late there is a somewhat more cheerful feeling in New York, and any further encouragement from that source would probably be helpful to the cotton market.

Like cotton, wheat and many other farm products are depressed, but prices are so low already that any change of importance in the future is likely to be for the better. With the value of securities, farm products, raw material and the finished product of the mills so low, plus cheap money, and a surplus of labor, it looks as though a foundation is being laid for a slow but steady recovery in business in the future.

There is no better way of judging the future than by referring to the past. Past experience has proved that whenever basic commodities sink materially below cost of production, as is the case now, production decreases, consumption increases, and price equilibrium is generally restored. This curative process will probably be in progress soon.

It will probably be advisable for spinners to buy their near and future wants of raw cotton, especially on depressions. After this time last season domestic consumption started to decline whereas from now on it is likely to increase. Last season domestic consumption of lint cotton was 639,759 bales in October; but dropped to 544,000 in November, and fell to 454,000 in December.

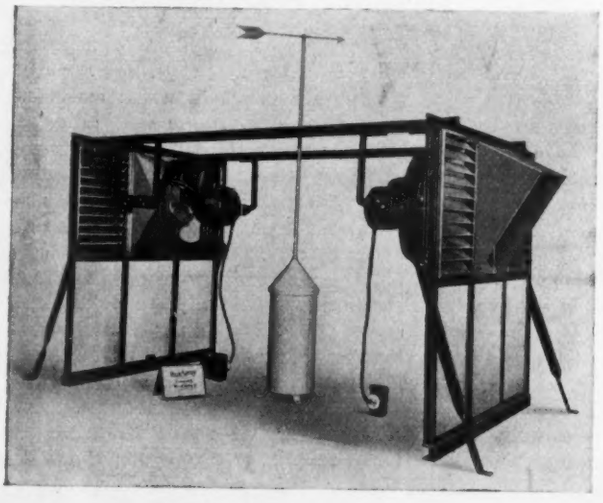
Later on more consideration will probably be given prospects for a substantial cut in the acreage next spring when prices are likely to go higher, perhaps much higher.

New Textile Equipment and Publications

PARKSPRAY COOLING AND VENTILATING SYSTEM.

Parks-Cramer Company, Fitchburg, Mass., have developed the ParkSpray cooling and ventilating system, for utilizing the cooling effect of evaporation from a direct moisture humidifying system, together with controlled ventilation, to cool a textile mill in warm weather.

In every properly designed humidifying system, it is pointed out, there is enough excess evaporative capacity in the summer to do a lot toward reducing temperature; but this excess capacity can only be used with the correct amount of ventilation. Too much ventilation will of course reduce the humidity. Too little ventilation allows some of the cooling capacity to remain unused. This new air conditioning system was developed with these thoughts in mind. Special fan equipment was installed in a good-sized spinning room, using ventilating fans located in the transoms; the fans being stopped and started automatically by pneumatic switches under the new conrol system. These fans, it is explained, deliver small streams of fresh air toward the middle of the room, setting the stagnant air there in motion, stimulating internal circulation of air, as well as ventilation. During a test run last summer, in exceptionally hot weather, the mill ran with the humidifiers on continuously for hours at a time while the fans controlled the humidity, the company states. When the humidity fell they stopped, and when it recovered they started up—also eliminating local variations in temperature and humidity formerly caused by unequal ventilation and local drafts. Thus, it is pointed out, the system provides for constant humidity at all times, re-claiming all useful heat in cold weather and rejecting objectionable heat in warm weather. To the automatic regulation of humidifying, the company states, has been added the automatic regulation of ventilation. Briefly, they say, "the whole idea is to utilize the cooling capacity of the humidifiers from evaporation, and discharge this dissipated heat out-of-doors."



Model showing principles of operation of ParkSpray cooling and ventilating system.

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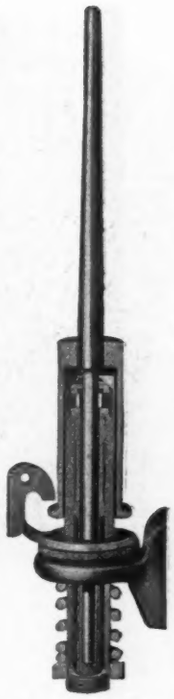
FLETCHER S K F ROLLER BEARING SPINDLE.

Fletcher Works, Incorporated, Glenwood Avenue and Second Street, Philadelphia, Pa., have announced the development of the Fletcher S K F roller bearing spindle for silk and rayon twisting machines. A cross-sectional view of this roller bearing spindle is shown in the accompanying illustration. In important dimensions and outer appearance, the Roller Bearing Spindle is practically the same as the plain bearing type. The design and construction, however, is quite different, it is pointed out. Instead of a cast-iron step, the new spindle has a steel sleeve which supports a cast-iron bolster in which the neck and thrust bearings are rigidly mounted. An S K F roller bearing takes the load at the neck. The spindle blade itself serves as the inner race. The step bearing consists of a phosphor bronze step in which the hardened ball point of the spindle blade is supported. The bolster is especially designed to prevent oil pumping, and the steel construction of the outer sleeve is designed to prevent oil seepage.



Fletcher Roller Bearing Spindle

The manufacturers point out that numerous tests on twisting frames have shown that these roller bearing spindles effect a power saving of 10 to 25 per cent; that they will operate at higher speeds than plain bearing spindles without increased power, or at the same speed with less power. The maximum speed is quickly reached and evenly maintained, it is pointed out, and the peak load is considerably reduced as the starting load is practically the same as the running load. The new spindle, it is stated, is interchangeable with practically every type and make of old style plain bearing spindle. It is furnished complete with blade, whorl, bolster and sleeve, and will fit into existing swings.

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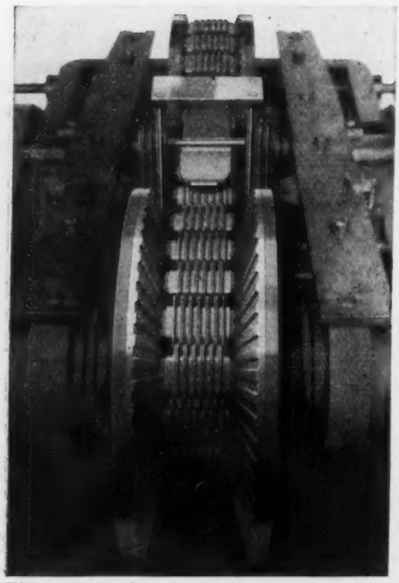
NEW LINK-BELT VARIABLE SPEED TRANSMISSION.

Link-Belt Company, Philadelphia, Pa., have recently placed on the market what is said to be the first all-metal variable speed transmission, called the P. I. V. Gear, the initials standing for "Positive Infinitely Variable." Basically, this new speed change unit consists of two pairs of wheels of the opposed conical disc type, between which a unique chain transmits power. The effective diameters of each pair of wheels can be altered under load to change the speed ratio, without steps and without dependence upon friction, it is stated. On changing speed, the self-pitching chain rises in one set of wheels and descends in the other, so that while the input shaft connected to a motor or other source of power turns at a constant speed, the output shaft is brought to the desired revolutions per minute.

The original feature pointed out for the P. I. V. Gear is its use of a positive chain drive to transmit power.



Illustrating the tooth formation of the P.I.V. chain on minimum diameter of a wheel.

Radial teeth are cut in the conical faces of the driving discs, and the self-adjustable teeth projecting beyond the sides of the chain are arranged to positively engage the radial teeth of the discs.

The chain used in the P. I. V. Gear is made up of a series of steel leaves or links with joints consisting of hardened steel pins turning in segmental bushings, with no teeth on the inner surface of this chain. Instead, what may be called teeth are made up of packs of hardened steel laminations or slats which extend through slots in the links at right angles to them, and project about ⅛-inch at each side of the chain. The individual containers which hold the packs of slats are secured in the openings of the links, but, within each such container, the slats are free to slide from side to side individually with relation to each other and adjust themselves to engagement with the radial teeth of the discs over substantially the full range of diameters.

The teeth of the discs widen from the center outward toward the circumference, but are of uniform depth. They are so staggered relatively on each pair of wheels that the slats move back and forth into the teeth to mesh correctly as the chain comes into contact with the wheels, assuring, it is pointed out, self-pitching of the chain to any tooth width or wheel. All elements of the gear are built into and protected by a compact oil-tight housing, and are automatically splash lubricated.

The hardened steel wheel faces are mounted on cast iron hubs backed by ball thrust bearings, and move axially on the shafts, which in turn are mounted in radial bearings. The movement of the pairs of wheels together or apart, in order to decrease or increase their effective pitch diameters, is controlled by a pair of pivoted levers operated through a hand control shaft with right and left-hand screw motion. A speed indicator permits ready check-up on operating speed settings.

The gear has been put into production for the present in five sizes, from one to ten h. p. capacity, providing speed change ratios up to a maximum of six to one. Booklet No. 1274 of this company describes the gear.

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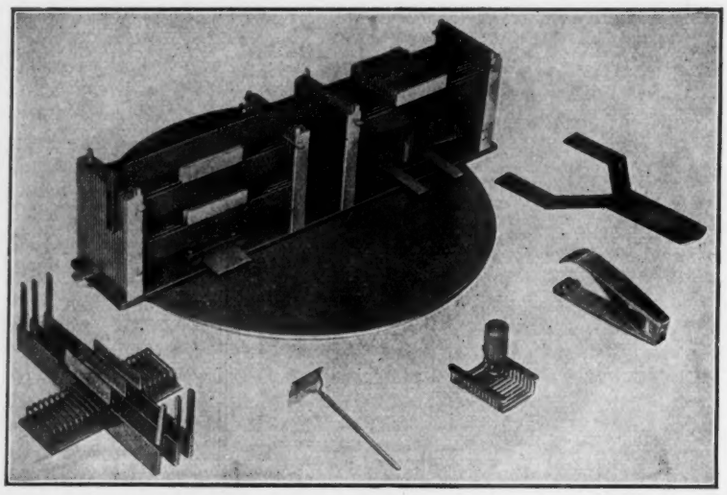
THE SUTER-WEBB DUPLEX COTTON FIBER SORTER.

Alfred Suter, textile engineer, 200 Fifth Avenue, New York City, recently placed upon the market the Suter-Webb duplex cotton fiber sorter, for sampling and sorting cotton fibers by length. This device was developed by Dr. R. W. Webb, Cotton Technologist at the Fiber Laboratory, Division of Cotton Marketing, Bureau of Agricultural Economics, United States Department of Agriculture at Washington. An illustration of the device with the auxiliary equipment, is shown herewith. The sorter consists of two racks mounted on a turn-table. Each rack is furnished with 16 lower combs and 6 upper combs. With a mechanical releasing device, one can lower one comb at a time to its bottom position, so as to be able to pull out the fibers projecting out from the next comb. A wire depressor, a clamp for pulling fibers, a rack for combs not in use, a fiber straightening rack, and a comb-lifting fork are also provided. Also, four velvet covered aluminum boards, 4 x 9 inches, upon which to place each tuft of fiber separately, are supplied. Each tuft can be weighed separately upon a micro-analytical balance or a torsion balance in order to determine accurately the proportion of each fiber length in a sample.



Suter-Webb Duplex Cotton Fiber Sorter Assembly.

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TEXROPE DRIVES IN TEXTILE MILLS.

The Allis-Chalmers Manufacturing Co., Milwaukee, Wis., recently issued Leaflet No. 2126, entitled "Texrope Drives in Textile Mills." The leaflet contains numerous illustrations of the Texrope drive, along with many statements of fact concerning this drive.

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NEW DYES.

Newport Chemical Works, Inc., Passaic, N. J., have announced that they have placed the following new dyestuffs on the market: Celanthrene Red Y Double Powder; Newport Brilliant Acid Red G; Newport Direct Orange F; Newport Fast Acid Red S W G; Celanthrene Brown B R Powder and Celanthrene Brown Y Powder.

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A. S. T. M. PAMPHLET ON SPECIFICATIONS.

The American Society for Testing Materials, 1315 Spruce Street, Philadelphia, Pa., through its Committee D-13 on textile materials, has recently published a pamphlet which embodies specifications covering a wide range of textile materials. It contains tolerances and twist methods for cotton yarn and sewing threads, light and medium weight cotton fabrics, tire fabrics and tire cord, electrical silk and cotton tapes, asbestos yarn and tape, rayon, knit goods; tolerance for numbered cotton duck, hose and belting ducks, tire cord; methods of testing woven fabrics, specifications for testing machines, chafer tire fabrics, cement sacks, sugar bags; and definitions of terms relating to textile materials.

These specifications have been devel-

oped by the collaboration of producers and consumers of textile materials, assisted by representatives of Government Bureaus, testing laboratories, and manufacturers of testing equipment. They represent best methods known at present and are revised from time to time as knowledge of textile material advances.

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DAYTON SECURES RIGHT TO "LINK-WEDGE" BELT.

The Dayton Rubber Mfg. Company, Dayton, Ohio, have announced through their president, J. A. MacMillan, that they have completed negotiations with the Roderwald Company of Berlin, Germany, for manufacturing and distributing rights in North, South and Central America of the new Vee shaped "Link-Wedge" belt, and manufacture will start soon. In announcing the completion of the negotiation, Mr. MacMillan said, "The 'Link-Wedge' belt is constructed of fabric and rubber and was perfected by Herr Roderwald, president of the Berlin Company, after ten years of experimentation. It is of Vee type construction with integral cogs on the inside and runs on a standard Vee shaped pulley. The outstanding feature is that this Vee belt is adaptable, and adjustable to any length desired. A metallic clamp is used to join the ends."

Mr. MacMillan points out that this latter feature is a new development in Vee belts. He states that the Link-Wedge belt has already been adopted by Germany as standard on its railroads above 1200 watts; that it has also been installed on the giant Dornier X airship. He also states that the belts are likewise being applied on cars of the Canadian railroads.

In this particular service it is used as a flexible drive for the lighting system, and in connection with the belting a special patented flexible drive assembly is used which serves the double purpose of relieving the jars and bumps and holding the tension of the belt taut.

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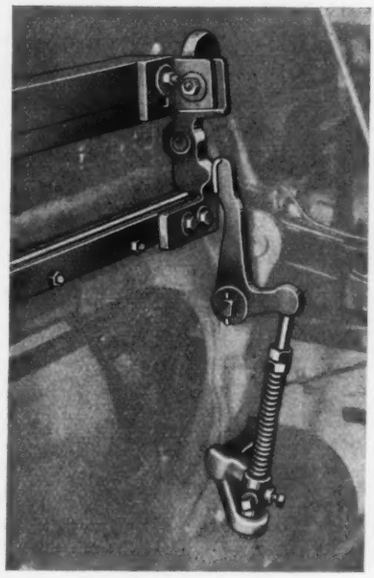
NEW REED HOLDER FOR SILK LOOMS.

The Stafford Co., Readville, Mass., announces a new reed holder for silk looms. The unique feature of this holder lies in the fact that it is pivoted at the normal center of balance. Thus pivoted the holder does not need a heavy resistance to hold it in place. It compensates through a cam, as may be seen by the illustration, against a minimum of spring resistance to obtain an even beat at the fell with a minimum of wear. By eliminating the need for a counterbalance weight the total weight of the unit is reduced so that the action of the reed holder is extremely easy to control, according to the company.



Silk Loom Reed Holder.

The company also brings to attention the fact that the new reed holder is adjustable for use as either a fixed or loose reed by tightening or loosening the set screw at the bottom of the spring arm. Other advantages claimed for the new holder are that it will weave crepes without the use of automatic let-off motions and, at the same time, produce even goods.

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STEEL SPRING RECORDING GAUGES.

The Foxboro Company, of Foxboro, Mass., recently announced that they had perfected during the current year an alloy-steel helical spring movement for their recording gauges, and that this new movement is the greatest advance in recording pressure gauge design for the past twenty years. This new Foxboro gauge movement is of one piece tubing—all steel and all welded, the company states. The company also states that this new gauge movement combines maximum safety with high resistance to commonly encountered corrosive agents. This is very adequately described in Bulletin No. 168.

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NINETEEN THIRTY EDITION OF COTTON HANDBOOK.

The 1930 edition of the Annual Cotton Handbook, published by Comtelburo, Limited, 25 Beaver Street, New York City, has just been issued. This is the 60th year of publication of the handbook, which contains, as usual, statistics covering the American cotton crop and also all European and Brazilian statistics, together with much useful and reliable information for the cotton trade. The price of the book is $1.00 per copy.

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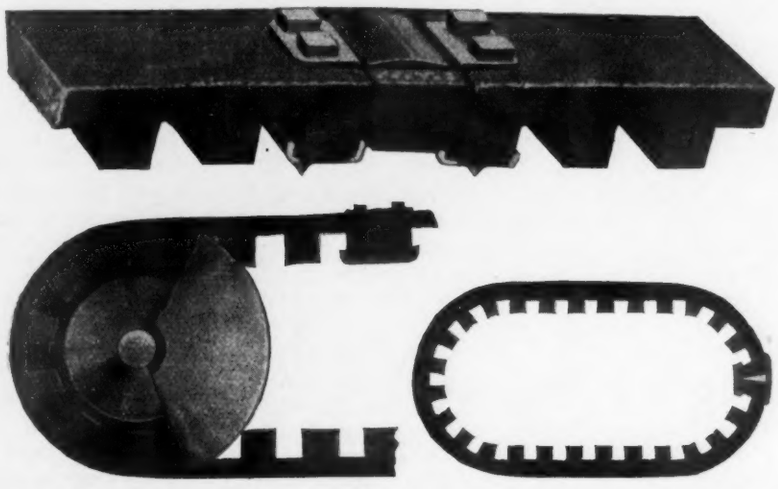
HOUGHTON DEVELOPS NEW GEAR LUBRICANT.

A new series of gear lubricants for all types of heavy, slow-moving, open gears has been developed by the research staff of E. F. Houghton & Company, Philadelphia, Pa., after extensive tests. These lubricants are known as Tenac No. 1, No. 2, No. 3, and No. 4. The Houghton research staff state that this lubricant will not be thrown off of the gears while they are in motion, and thus eliminates high frictional losses, undue power losses, and premature wear of gears. There are different grades of this lubricant, it is pointed out, Tenac No. 1 being the heaviest, while Tenac No. 4 is the lightest.

Another point stressed by the research staff is that Tenac No. 3 and No. 4, for example, can operate at extremely low temperatures.

No special device or method of application, it is stated, is required.



Three views of the "Link-Wedge" belt. Note metal clamps for joining ends.

NEWS ITEMS *with a Textile Slant*

MINIATURE GARMENTS.

An innovation in sampling textile merchandise has been brought into the cutting-up field, in the form of making up miniature garments of any given fabric, instead of merely submitting head-ends, as has been the trade custom.

The small garments, which are made up for the trade by the Minatex Sample Company, of 719 Santa Fe Bldg., Dallas, Texas, and 93 Worth St., New York, under patents recently granted, are so fashioned that they show the collar, front and sleeve finish of a shirt; the front, pocket and any other distinctive features of pajama coats; the waist, front, pocket finish and bot-

tom of pants numbers, etc. Two typical illustrations are shown herewith.

A number of mills in the country, which make finished products, now are sending their goods to Minatex Sample Company at Dallas to be made up into the small sample garments. The chief advantage of the system lies in ability to carry samples of a full line, even an extensive one, in small space, and to show the buyer just how the material looks when made up, as well as to bring home the refinements in garment making, impossible to describe adequately, and which heretofore could be shown only by carrying trunks filled with the actual garments. Added to these advantages is the huge saving in cloth to manufacturers who have extensive lines or are called on for many samples to be sent by mail.

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RAYON COMPANIES CONTROL RUBENSTEIN PATENTS.

The entire capital stock of the Knitting Arts Corporation, which was recently formed for the purpose of controlling the patent issued to H. Rubenstein in April of this year has been purchased by the Viscose Company, Du Pont Rayon Company, and Tubize Chatillon Corporation.

It will be recalled that this patent covers the manufacture of a circular knit underwear fabric of a run-resistant nature, and has been the subject of much discussion in both knitting and retail circles during recent months.

It is stated that applications for a license to use the Rubenstein patent will be accepted on the basis of a royalty charge of one-quarter of a cent for each pound of run-resistant fabric manufactured by the licensee to those making application for same within a period of thirty days from date and executing the license agreement promptly thereafter. After that time, the Knitting Arts Corporation reserves the right to reject any or all applications for license and to increase the rate of royalty to future licensees. All applications for license should be addressed to the temporary office of the Knitting Arts Corp., Suite 1406, 475 Fifth Avenue, New York.

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MAKES IMPROVEMENT IN PLANT.

Having recently completed a new factory at Toronto, Canada, as well as an entirely new plant to house their Pacific Division at San Francisco, Cal., the Link-Belt Company now announces another improvement for their Indianapolis foundry. They have just closed a contract for a powdered coal system entailing an expenditure of $125,000. Preparation for future business was given as the reason for adding this equipment at the present time. Mr. Alfred Kauffman, president of the company stated, "Now, during the slack production period, is the time to perfect manufacturing processes and prepare for future business. We believe in practicing what we preach."

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MANHATTAN RUBBER MAKES AN ANNOUNCEMENT.

The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., announce the consolidation of a group of their products applicable to the textile field to be sold under the trade name of Condor Textyl Line. This company has southern headquarters at Birmingham, Ala., and is also represented with branches and warehouses throughout the textile field selling through mill supply organizations.

They have just issued a catalog on this consolidated line, including Condor textile belts, V-belts, cone-belts, air, water, steam, acid and fire hose, rubber covered rolls, harness strapping and picker straps cloth bunters, picker bumpers, and oilless bearings.

H. BRINTON OPENS NEW OFFICE.

H. Brinton Co., Kensington Ave. and M. St., Frankford, Phila., builders of automatic circular knitting machinery, recently announced the opening of an office in New York at 366 Broadway, Room 304. The office is to be in charge of J. R. Forrest, who has been connected with this company for a number of years, and who is thoroughly familiar with all the company's products.

J. R. Forrest.

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ADDITION MADE TO SALES STAFF.

American Bemberg Corporation, 180 Madison Ave., N. Y., recently announced that increased business opportunities in the southern states have caused them to place an additional man on their sales staff. Charles J. Hall, Jr., who has had wide experience selling yarns in the south, will cover Tennessee, Georgia, Alabama and Mississippi, with headquarters in the Provident Building, Chattanooga, Tenn.

Gordon Hope, who has been covering this territory as well as Virginia, North Carolina and South Carolina for American Bemberg Corporation, will now confine his work to the latter three states only. His offices will continue to be at Greensboro, N. C., in the Greensboro Bank and Trust Company Building.

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COLORED CORRUGATED FIBREBOARD.

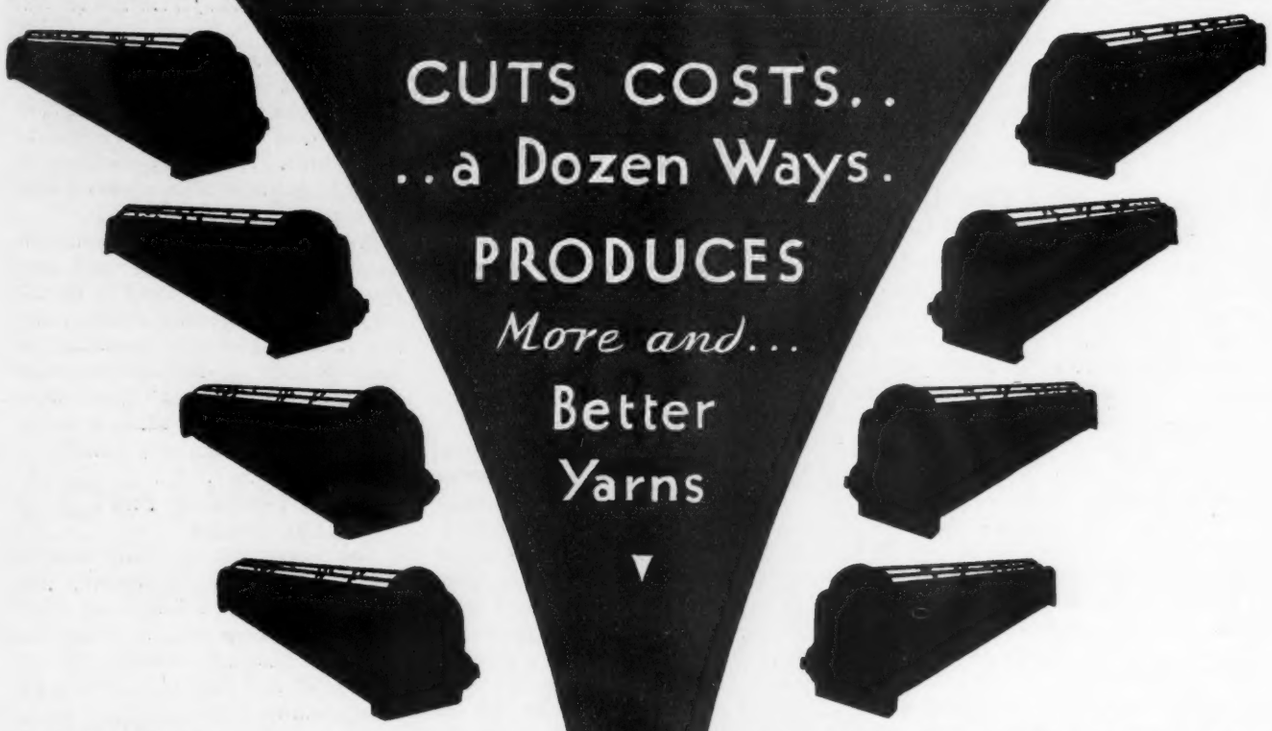
A late and very revolutionary development in the history of the corrugated fibreboard industry is the contribution of a colored liner which makes practically a display box out of every corrugated container passing out of the shipping rooms of users, according to the Container Corporation of America, 111 W. Washington St., Chicago. They state that buyers will have a choice of all the colors of the rainbow for their corrugated boxes, thereby obtaining a fine advertising package.

Attempts to produce colored liners hitherto have been neither resultful nor practicable due to excessive cost to consumer and indifferent printing, the Container Corporation points out. The company further states that for all practical purposes the problem now seems to have been solved as the additional cost, in carload lots or better, is nominal.

ANOTHER MILL CUTS ROVING COSTS

(Eliminating 8 Frames)

BY INSTALLING MODERNIZED SPINNING



ANOTHER mill has modernized its spinning room the Saco-Lowell way. It replaced 9210 old spindles (48 frames) with 8704 new Saco-Lowell-Roth Long Draft spindles (32 frames). It cut costs in a dozen ways, a few of which we list below: 1.—Eliminating 506 spindles, it increased production 10%.... 2.—It eliminated the need for one process of roving formerly required.... 3.—It saved floor space on spinning and roving.... 4.—It cut overhead expense.... 5.—It saved on labor in the following ways: (*a*) $70 per week in labor by eliminating 32 sides of spinning. (*b*) Saved the labor on 32 sides of spooling. (*c*) Saved the labor on 8 fly frames.... 6.—It increased the Standard Break by 1.6%.... 7.—It saved a substantial amount on power.

THE following table of comparisons shows in detail how the modernized spinning affected the card room. (It should be noted that the new method makes it possible for the mill to spin many extra numbers from the same roving.)

Old Organization	*New Organization*
14.25 Warp Yarn	14.25 Warp Yarn
From 1.90 H. R.	From 1.00 H. R.
Machines	Machines
12 x 6 Slubbers	12 x 6 Slubbers
10 x 5 Intermediates	10 x 5 Intermediates
8 x 3½ Roving	Roving
Standard Break 122 lbs.	Standard Break 124 lbs.
Draft 7.5	Draft 14.25

These are facts on only one of many Saco-Lowell installations which we have in our permanent records. We cite them to show what modern mill managements can do with the advanced type of machinery which we have developed. Perhaps we have facts that will interest you more,—that are closer to your problems. Ask us. There is no obligation.

SACO-LOWELL

MANUFACTURERS OF TEXTILE MACHINERY

147 MILK STREET, BOSTON, MASS.

CHARLOTTE, N. C. SPARTANBURG, S. C. ATLANTA, GA.

It is pointed out that boxes in color can be used to advantage in window displays, and that their advertising value is on a par with bill boards and car cards at a much lower cost. They attract attention on trucks, sidewalks and shipping platforms.

It is believed that shippers will welcome the change from a drab, uninteresting container with limited advertising possibilities to a new box, resplendent in bright colors and "dressed up" to add class to the goods carried, especially as prohibitive cost is no longer a factor to consider by the buyer.

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DEFEATING CORROSION IN DYE HOUSE FUME DUCTS.

The problem of providing suitable ventilation to carry fumes from dye tanks and at the same time defeating the corrosive action of the fumes on the equipment has been solved, according to a recent report of Wiesner-Rapp Company, of Buffalo.

The equipment consists of a hood, ten feet long, with a tapering duct mounted upon it to conduct the fumes to the fan. Ports, six inches by twenty four inches, in the top of the hood admit the fumes to the duct. Any condensate is conducted to a trough running around the apron of the hood and discharged to the sewer through a pipe at the fan end.

It is explained that the defeat of corrosion is effected through the use of 20 gauge Monel metal sheet for both the hood and the duct. Both are of standing seam construction, riveted with Monel metal rivets and braced with Monel metal bar stock.

The first unit of this equipment was installed more than a year ago, but, according to the Weisner-Rapp Company, at no place is there any sign of corrosion. The inside and outside of the hood still has the appearance of new full finished sheet except around the outside of the trough where there is a slight surface discoloration, which it is stated may be easily rubbed off with the fingers.

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NEW MUNDET REPRESENTATIVE APPOINTED.

L. Mundet & Son, Inc., 461 Eighth Ave., New York City, have announced that Harry L. Dunham has been appointed to assist Willard A. Selle at the Houston, Texas, branch office. The company states that this is in accordance with their policy to always render maximum service in connection with the sale and installation of Mundet "Jointite" cork board and Mundet "Jointite" cork pipe covering and moulded fitting covers.

NEW "MOTOR WATCHMAN".

The WK-16 "Motor Watchman," a small, simple, and inexpensive motor starting switch with resettable automatic overload protection, is announced by the Switchgear department (safety switch section) of the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

This motor watchman, according to the company, is especially suitable for use with textile loom and machine tool motors, it being pointed out that the fact that it can be reset very rapidly, whereas the replacement of a fusible element takes some time, makes it very adaptable for textile motor protection because this feature permits the rapid resumption of production. All ratings are enclosed in the same size box, 4 7-8 inches wide, 9 inches long, and 3 11-16 inches deep; therefore, it is possible for machine tool builders to design for and stock only one size box, the company states.

The company explains the operation of the switch as follows:

A new method of automatic overload protection is employed that is a method of tripping the contacts by heating a performed bimetallic disc (the Built-In-Watchman) which does not gradually deflect but maintains its shape up to a predetermined point. When this point is reached it snaps to another position affording a positive tripping means. In its normal position the upper side is convex, the rim being rigidly held. When overheated, this side becomes concave. There is no intermediate point—the action being of bullet speed.

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PONSOL BLACK BA DOUBLE PASTE.

Pensol Black BO Double Paste, a vat color yielding shades appreciably redder and brighter than those obtained with Ponsol Black B Double Paste, has recently been placed on the market by the Dyestuffs Department of E. I. du Pont de Nemours & Company.

It is claimed that the principal advantage of this color, compared with the company's B brand, lies in the increased stability of its vat. Ponsol BA Double Paste may be used in the concentration required for continuous machine dyeing and padding without fear of its precipitation even over extended periods and, in addition, less caustic and hydrosulfite are necessary for its successful application, the company states.

It is stated that Ponsol Black BA Double Paste is suitable for application either as a gray or in full blacks on all types of cotton and it also may be used on rayon and pure silk. It is said to have excellent solubility, penetrates well and is level dyeing.

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FAN-COOLED INDUCTION MOTORS.

The Reliance Electric & Engineering Co., 1088 Ivanhoe Road, Cleveland, Ohio, have brought out a line of fully enclosed fan-cooled induction motors in sizes of 20 hp., 1200 r.p.m. and above, for which the Mossay Principle of cooling is used.

The company states that this method of cooling is employed for the larger sizes because the design of the smaller motors does not provide sufficient cooling area. The extra cooling area is obtained by use of tubes extending over the outside of the stator.

According to the company, using this method of cooling for the large sizes makes it possible for them to furnish fully enclosed fan-cooled motors which are interchangeable in mounting dimensions with standard open motors of the same horsepower and speed rating in all sizes from the smallest to the largest (150), which they build.

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"NEW ADVANTAGES FOR VALVE USERS."

New Advantages for Valve Users is the title of a pamphlet recently published by Jenkins Brothers, 80 White Street, New York City, in which they make the following assertion concerning a new valve they have recently put on the market:

"The one-piece screw-over bonnet in combination with the slip-on stay-on disc holder is an entirely new departure in bronze valve design. The one-piece bonnet construction provides ease in removal, and contributes unusual strength, which, it is claimed by the manufacturer, prevents springing or distortion, even though the bonnet is removed and replaced repeatedly. The valve throughout is heavily proportioned."

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TWO NEW PAMPHLETS.

Borne Scrymser Company, 17 Battery Place, New York City, have recently issued two new pamphlets entitled, "Are You Still Groping in the Dark?", and "Borne's Universal Compressor." The first carries a method that will shed light upon the subject that vitally concerns the maintenance or lubrication engineer, superintendent or plant executive. The material in this pamphlet is of a very instructive nature. The second pamphlet describes in a very enlightening manner the different features claimed by the company for the Borne Universal Compressor. It also gives descriptive information pertaining to the function and adjustment of the compressor.

when you want to cut down on COSTS

consult the G·T·M·

Now is the time to consult the G.T.M.—Goodyear Technical Man. He will save money for you. He will make your job go more easily and smoothly. You will benefit by his wide experience and expert skill in applying Mechanical Rubber Goods to the needs of industry for economy and power. His specialty is movement. Whether it is materials, liquids, air, or engine-power you have to move, he will get the work done for you in the shortest time and at lowest cost.

Throughout the textile industry are G.T.M.-specified economies. He is an expert in the field. He has effected outstanding savings with Goodyear Thor Belts—silver-duck structure and rubber cushioned between plies—a seamless belt with protected edges. He has supplied thousands of feet of Goodyear Wingfoot Air Hose to conduct air efficiently in clean-up operations. He has furnished Goodyear Cone Belts for steady power on textile machinery. The G.T.M. knows your work and your problems. He can bring new profit to your plant.

To learn of the G.T.M.'s experience in work similar to yours, just write to Goodyear, Akron, Ohio, or Los Angeles, California.

THE GREATEST NAME IN RUBBER

GOODYEAR

BELTS MOLDED GOODS HOSE PACKING

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

Joseph R. Leeson, founder of the Universal Winding Co., Providence, R. I., died of pneumonia, in London, England, on Saturday, November 8th, at the age of 86 years. Up until five years ago, Mr. Leeson had been president of the Universal Winding Co., becoming at that time chairman of the board of directors, and removing to London where he had charge of the company's foreign affairs. Mr. Leeson was born in London, and came to the United States as a young man. First engaging in the thread business, he later organized the Universal Winding Co. His son, Robert A. Leeson, who is now president of the company, survives him.

Mr. Sheldon.

A. M. Sheldon, who has been vice-president and general manager of the Union Special Machine Company, Chicago, since January 1, 1926, was recently elected president of the company. He succeeds the late Francis Stanley North. Mr. Sheldon has been connected with the company since 1915.

Stephen R. Moore, for the past five years instructor of weaving at the New Bedford Textile School, was recently added to the sales staff of the Steel Heddle Mfg. Co., Philadelphia.

Warren H. Pearman has resigned his position in the twisting department at the Goodyear Clearwater Mills, Atco, Ga., to accept a position as general overseer of carding, spinning, twisting and winding at the Tellico Cotton Mills, Inc., Tellico Plains, Tenn.

Robert E. Heinl has been appointed southern representative of the Morton H. Meinhard Co., Inc., 51 Madison Ave., New York City. Mr. Heinl is familiar with the factoring problems of southern textile mills. He will be located at 221 Malvern Road, Charlotte, N. C.

Wilkins Cagle has been appointed as the special textile representative for the lumber department of Curtin-Howe Corp., timber preservation engineers. Mr. Cagle was with J. E. Sirrine & Co. for a number of years and has also been connected as a manufacturer's representative serving the southern textile field. He will work out of the Chattanooga office, covering the entire southern textile territory.

J. P. Carter, for 18 years superintendent of Clinton Cotton Mills, Clinton, S. C., has been appointed as service representative for Manhattan Rubber Mfg. Co. Division of Raybestos-Manhattan. He will have headquarters at 501 Houston St., Greenville, S. C.

C. L. Leopard has resigned his position as overseer of weaving at the Arkwright Mills, Spartanburg, S. C., to accept a similar position at the Hermitage Cotton Mills, Camden, S. C.

D. L. Jones is now overseer of weaving at the Arkwright Mills.

Jos. F. Wilson is now in charge of the Gastonia (N. C.) plant of the Atlanta Brush Company. He succeeded A. B. Bell, who resigned.

William Piez, European correspondent of Link-Belt Company, and a brother of Charles Piez, chairman of the board of Link-Belt Company, died at Brussels, Belgium, on November 2nd after a week's illness.

E. J. Walden, formerly superintendent of carding and spinning at the Banning Cotton Mills, Banning, Ga., is now night overseer of spinning, spooling, twisting and winding at the Caroline Mills, Carrollton, Ga.

A. H. Shafer has been recently appointed manager of the Foxboro Company's Pittsburgh office, replacing H. S. Gray who is now in charge of office routine at the home plant.

Austin H. Carr, for the past three years vice-president and treasurer of the Durham Hosiery Mills, was elected president of the corporation at a meeting of the board of directors held during November. His elevation to the presidency followed the resignation of D. P. Carey, who resigned to become president of Belding-Hemingway Company, silk manufacturing concern of New York City.

Frank Pate has been promoted from office manager to assistant superintendent of the Shawmut Mill Division of the West Point Manufacturing Company, Shawmut, Ala., succeeding Joe L. Lanier, who has been transferred to the general offices of the West Point Mfg. Co., as assistant to George H. Lanier, president.

Luther Scales, who was formerly with the Fairfax Mill Division of the West Point Manufacturing Company, has been made office manager at Shawmut.

Ben T. Mulligan, formerly night overseer of carding at the Woodside Cotton Mill, of Greenville, S. C., is now overseer of carding at Easley Mill, No. 2, Liberty, S. C.

E. N. Hummer has been appointed southern representative for Anchor Post Fence Co., and will have offices at 105 Latta Arcade, Charlotte, N. C.

J. J. Hyder, who recently resigned as superintendent of the Social Circle Cotton Mills at Social Circle, Ga., has become overseer of weaving at the Rhodhiss Mills Company, Rhodhiss, N. C.

D. K. Dunn, formerly overseer of carding at the Alabama Mills, Greenville, Ala., is now overseer of carding at the Werthan-Morgan-Hamilton Bag Co., Nashville, Tenn.

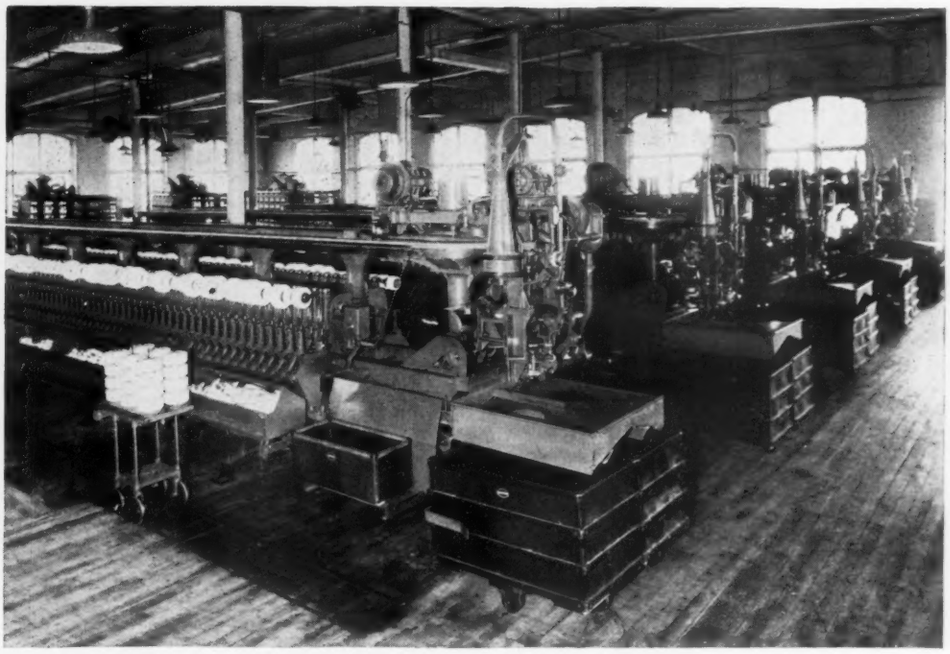
J. Oscar King, of Lanett, Ala., now has charge of weaving at the Werthan - Morgan - Hamilton Bag Co., Nashville, Tenn.

S. A. Lovelace, of Elizabethton, Tenn., and Nelson H. Harte, of Burlington, N. C., have gone to Hemp, N. C., to take charge of the silk mills there recently taken over by Spencer Love and associates of Burlington.

Lawrence Brumby, general manager of the Porterdale (Ga.) Mills, has been transferred to the Macon (Ga.) office of the Bibb Mfg. Co., where he will serve in a similar capacity over several of the Bibb plants.

George Glenn recently resigned his position as assistant superintendent of the Swift Spinning Mills, Columbus, Ga.

« EVERY KNOT A WEAVER'S KNOT »



The illustrations show the equipment consisting of five Barber-Colman Automatic Spoolers and four High Speed Warpers installed at

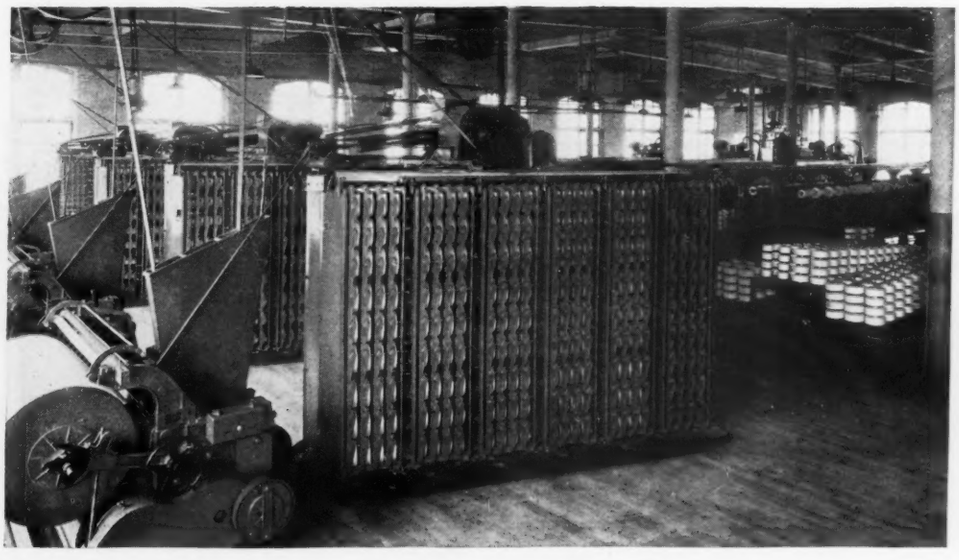
EXPOSITION COTTON MILLS

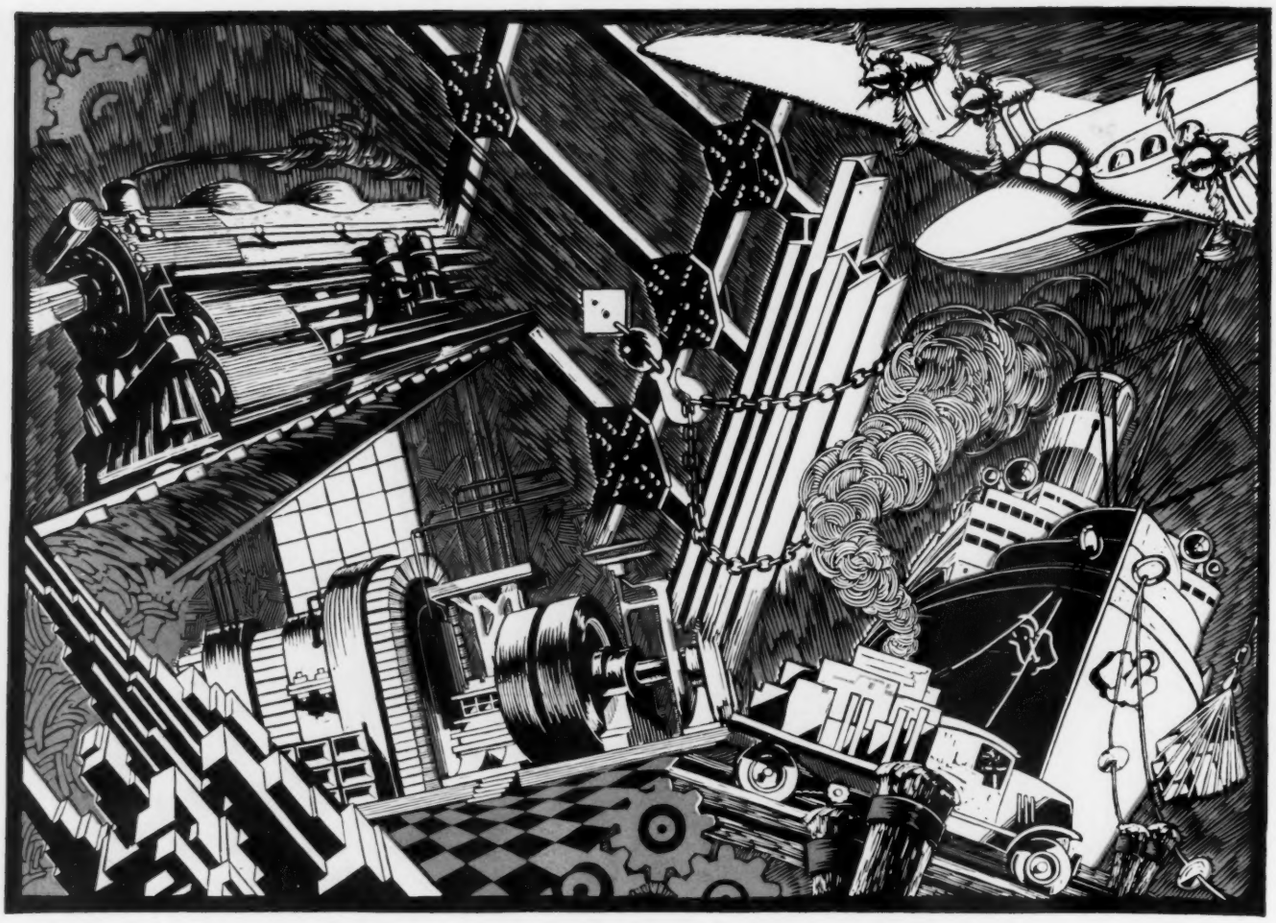
located at Atlanta, Georgia. Barber-Colman Spoolers and Warpers produce better warps at lower cost. Features: High Speed . . . Low Tension . . . . . Weaver's Knots . . . . . No Kinks . . . . Better Weaving

BARBER-COLMAN COMPANY

General Offices and Plant « « ROCKFORD, ILLINOIS

FRAMINGHAM, MASS. GREENVILLE, S. C.





THE MACHINE AGE

FOR centuries Labor struggled against hopeless odds . . . enslaved, oppressed, abused . . . endangered, embittered. Performing stupendous tasks requiring years of toil, or of such severity as would now seem physically impossible to do. Forced to slave, without pay, for tyrannical rulers whose powers were absolute, even to put to death. With no liberty, no rights, no function but to toil, that the privileged few might live in luxury and idleness.

Today, millions of horsepower, harnessed to machines, have replaced the man power of primitive toil. Present-day civilization is the highest the world has ever known . . . the Machine Age of breath-taking marvels. Machinery has liberated Labor from the shackles of slavery, has brought higher wages, shorter working hours, more leisure, better living. Being paid a considerable portion of the wealth it creates, Labor, itself, now has tremendous buying power.

Textile executives of fourteen countries, through the use of Terrell machines for cleaning roving and filling bobbins, have saved Labor drudgery and increased the value of spinners' and weavers' work.

Cleaning bobbins by hand means slower production and greater operating costs.

The Termaco machine for cleaning roving bobbins cleans bobbins faster, more efficiently and more economically. Bobbins are not split and last indefinitely. Staple is not cut and roving waste can be used without reworking.

The Utsman machines for cleaning filling bobbins speed up production by cleaning many times faster than the hand-method, without splitting ends.

The Type K machine for cleaning both plain and automatic loom bobbins and certain kinds of warp bobbins cleans about 60,000 bobbins daily.

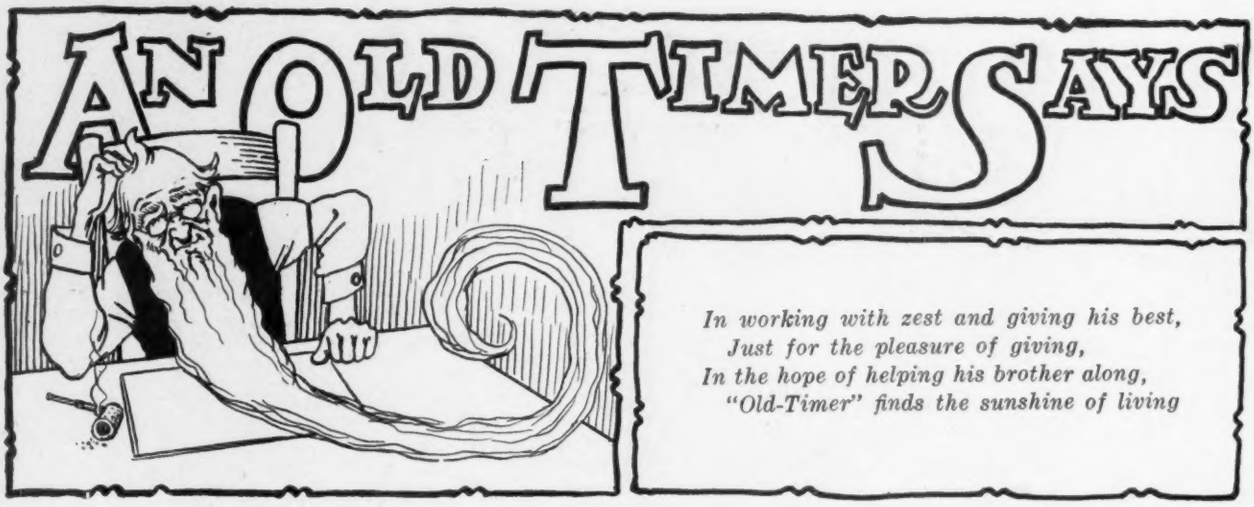
If you are interested in cutting operating costs in your mill, do not overlook the savings which are possible with Terrell bobbin cleaners.

Complete, interesting information about these machines, how they save on waste, prolong life of bobbins and pay for themselves in the average installation within twelve months, will be sent upon request.

In writing, state whether you are interested in cleaning roving or filling bobbins and, if possible, send a sample of the particular bobbin you have in mind. If you are interested also in motor-driven machines, give full details, including voltage, phase and cycle of your current.

THE TERRELL MACHINE COMPANY, INCORPORATED
Charlotte, N. C.

(General Supply Co., Danielson, Conn., representatives for New England, New York, New Jersey, Pennsylvania and Canada.)


AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living

A Lesson for Southern Workers

"Hey! Jim. What are you looking so glum about?"

"Oh, nothing in particular, OLD-TIMER, *but just everything in general."*

"Gosh! Jim, you must have had a terrible day. Boss jump on you about something?"

"No. Nothing like that, OLD-TIMER, *but a few days ago I heard that a certain mill (one of the large and successful mills of the South) had bought some second-hand machinery from an eastern mill, so I was naturally curious to know why such a successful mill would buy second-hand machinery, and I drove over to take a look."*

"Well, how did you like the pile of junk?"

"Pile of junk the dickens! I never was more surprised in my life, OLD-TIMER. *That machinery is in good shape, and the superintendent explained to me that it was built about the same time that the machinery he already had in the mill and that he really was not at all disappointed that they did not buy new machinery because it was being installed in the same building right along beside his other machinery and in a few months time it would all be operating the same and his help would not know any difference, while if he had installed new machinery beside the old he already had, there would always be a difference."*

"Yeah, Jim, that superintendent was just making the best of a bad bargain. Darned if I believe it will pay any mill to buy that junk from those mills that have gone broke up North."

"Hold on, OLD-TIMER. *Have you ever seen any of it?"*

"No. But I have heard plenty."

"Well, before you say any more, suppose we just run over there and take a look."

(One hour later.)

"Here we are, OLD-TIMER. *Now take a look at those cards that the superintendent told me they bought for less than it will take to clothe one.*

"You see the clothing is in good shape, don't you? And the flats have been re-clothed. See how long that wire is. Even the spiral brushes have been kept up and are in good shape.

IT SHOULD be clearly understood that in this article OLD-TIMER is not concerned with the merits of second-hand machinery. He is simply using this actual experience to bring out a point which should be explained to all operatives of the South: that the northern operative is out of a job and he brought on the condition himself, and this should be a lesson to the southern operative.—THE EDITOR.

"And here are the intermediates and speeders. Look at the steel rolls; very few scars on them and no loose points. The flyers and spindles also seem to be O.K.

"Now let's go up and see the spinning."

"Guess this is an exception, Jim, but I'll have to admit that this mill will have a good chance to pay dividends with this."

(Driving back to Jim's mill OLD-TIMER has not had a word to say, and seems to be in deep thought.)

"A penny for your thoughts, OLD-TIMER."

"Well, all I've got to say, Jim, is, my thoughts would be worth hundreds of thousands of dollars to the cotton mill operatives of the South if they would only take a lesson from what I have just seen."

"What are you driving at, OLD-TIMER? *What in Sam Hill have you seen except some second-hand machinery?"*

"Jim, I have seen a lot more than you think I have."

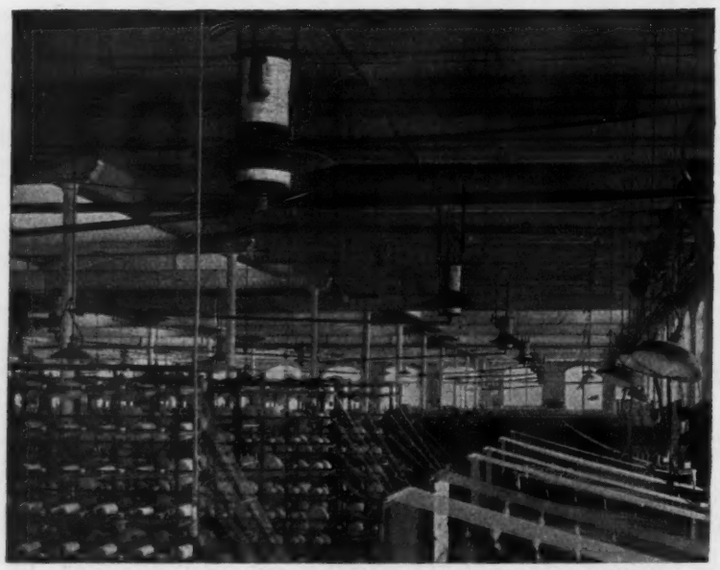
"Come on. Don't be beating the devil around the stump. Tell me what you have seen."

"Jim, do you realize that the operatives who have been running that machinery are out of a job?"

"Sure I do, OLD-TIMER. *What of it?"*

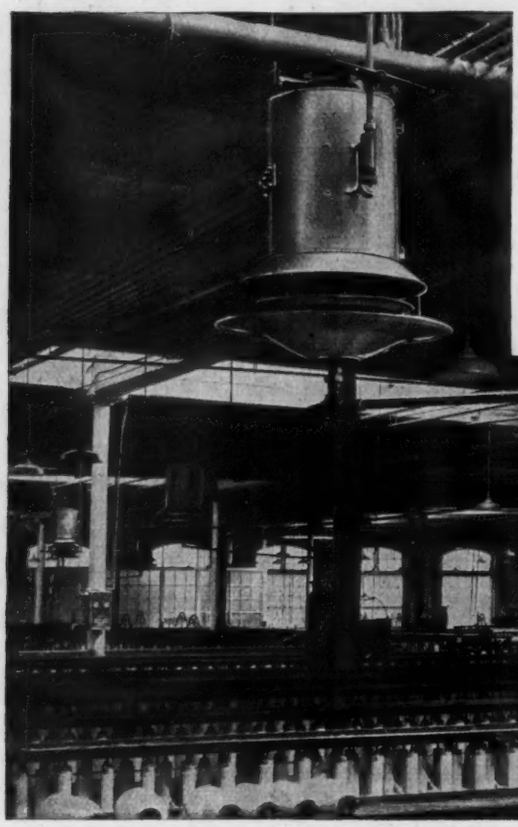
"Also the mill that owned that machinery is broke and has passed out of existence. I can picture in my mind those operatives who ran that machinery a year ago. They were making a good living; their children were being sent to school. Some of them were saving

Now for a few further economies



Picture above shows Amco Humidifiers installed at the Worcester Textile Co., Valley Falls, R. I.

Below—An Amco installation at the well known Jenckes Mill of Manville-Jenckes Co., Pawtucket, R. I. All of the humidification at this mill is automatically controlled by the Amco Control.

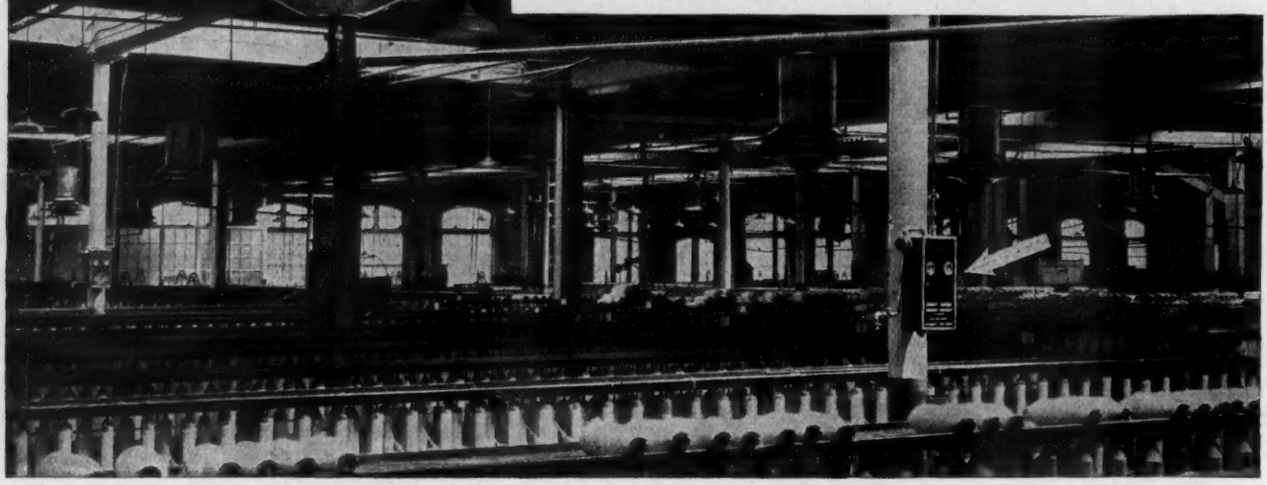


The Amco Automatic Humidity Control. An outstanding development for accuracy and simplicity of construction and operating parts.

THE quickest way to squeeze a substantial sum of money out of operations is to abolish the fickleness of moisture. You can't do it by *human* manipulation of humidifiers.

When running on a *part-time* schedule, savings of $50 a month here and $70 a month there are keenly appreciated by a mill agent. But human vigilance can't save these sums. AMCO automatic humidity control cuts costs hour after hour, because temperature cannot deceive the sensitive mechanism. Uniformity of production in all departments requiring humidity is assured. Steady machine operation is assured. Labor costs shrink. Each day is a demonstration in dollars of the economy of accurate automatic humidity control.

Our humidification engineers are at your service without charge or obligation to make a written survey of your humidification needs. Get an expert air doctor's advice on humidification requirements in all departments. An air doctor's diagnosis costs you nothing and may result in changing red figures into black figures, with a sweet running plant and better working conditions for labor as a bonus.



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Air Doctors Since 1888

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Christmas Greetings

Since this is the only means I have of addressing my readers as a body, I wish to take this opportunity to wish each and every one of you a Happy Christmas. I hope this year has been a good one for every one, and that next year will be even greater.—Old-Timer.

some money each week and building up a bank account to buy them a home when they got too old to work in the mill. Many of them had automobiles and radios and were enjoying life like our mill operatives here in the South are today."

"Sure, that is all true, OLD-TIMER, *but how could they help the mill going broke?"*

"They broke the mill, Jim. They put themselves out of a job. They brought it all on themselves, Jim. Along came one of those smooth-tongued labor agitators and made them believe that if they would only join his union and start paying him dues, that he would make the mill pay them double the wages they were making, and give them shorter hours, and all that kind of stuff.

"Then about the same time the cheap politician began to tell them that if they would only vote for him and send him to the legislature or Senate he would make money grow on trees for them. They would pass laws to make the mill do this and that for the operatives. The operatives believed these labor agitators and cheap politicians. They elected the politicians and laughed at the mill overseers and superintendent because they thought they had put one over on them. They joined the union and had their meetings, where they were told all the great things the labor agitator was going to do for them.

"No need to go on explaining, Jim. That machinery we just looked at explains it better than all the words in the English language can.

"Those good people got fooled. The labor agitator got all he could out of them in dues and left them with the bag to hold. The cheap politician got his job and is still in politics, while they are out of a job.

"Oh Lord! Jim, isn't there some way our good people here in the South—our good weavers, our good spinners, frame hands, doffers, section men, fixers and all the others—can be shown that they should profit by the experience those northern people have had?"

"Darned if I know any way to do it, OLD-TIMER. *You know that if an overseer or superintendent says anything to some of them they seem to think that all overseers and superintendents are their enemies and that we are doing all we can against them."*

"Well, Jim, maybe some of these days more of the southern mill operatives will find out that the overseers, superintendents and presidents really have their interests at heart and are the best friends they have."

"Sure, OLD-TIMER, *the mill presidents, superintendents and overseers realize that we have all got to pull together to prosper—in other words: 'We all go up and down together'."*

DOUGHBOY MONUMENT ERECTED AT PACIFIC VILLAGE IN COLUMBIA.

As a memorial to the men of the Pacific Mills community, a handsome bronze statue of the American Doughboy was erected in the community at Columbia, S. C., and was unveiled with appropriate ceremonies on Tuesday morning, November 11th, the 12th anniversary of the signing of the Armistice.

The monument, shown in the accompanying illustration, measured 14 feet in height from the base of a granite pedestal to the top of the doughboy's bronze helmet. The cost of the monument was covered by voluntary contributions from those living in the mill community, and some 3,000 persons contributed to the fund which made it possible. On the granite base which supports the figure of the doughboy are two bronze tablets, one bearing the names of the eleven men who left the Pacific community to go to war and who died in service, and the other carrying the names of the 203 members of the community who saw service during the war. J. H. Nichols, W. R. Connelly, J. J. Lever and F. B. Stigner, four former service men who are now

in the employ of the mill, conceived the idea for the monument, and the entire village responded to the proposal.

S. G. Touchstone, an overseer at the Pacific, was the presiding officer at the unveiling ceremony. Governor John G. Richards of South Carolina was present and spoke, and A. Stanley Llewellyn, manager of the Kendall Mills at Camden, S. C., who is State Commander of the American Legion, also participated, along with several other prominent men of the state. The monument is located at the intersection of Whaley and Wayne St. in the Pacific Mill village.

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TEXTILE CLUB FORMED.

A call for a meeting to organize a textile club for men was met with much enthusiasm when seventy men from the Aragon-Baldwin Cotton Mills, Whitmire, S. C., plant, met in the Y. M. C. A. auditorium recently. Mr. R. L. Wood, superintendent of the Whitmire plant, acted as temporary chairman. The club was organized with the following officers: W. T. Morton, president; J. H. Franks, vice-president; E. M. Horton, secretary; and J. C. Abrams, treasurer.

The second and fourth Friday nights in each month were designated as meeting nights. The purpose of the club is for the discussion of the problems of the mill man in his everyday duties, and also to promote the welfare of the community.

The following are eligible for membership: superintendent, overseers, second hands, section men, and smash hands.

Constructive Auditing

An independent audit is to be regarded always as the means to valuable advice from the auditor or auditing firm.

Too often, auditing service ends with the report of the financial condition of (name) as of (date).

Auditors should be equipped—and should be employed—to offer recommendations in connection with method, policies, financing, etc.; to furnish comparative statistics intelligently prepared; to point out how mistakes and waste may be eliminated, and pitfalls avoided.

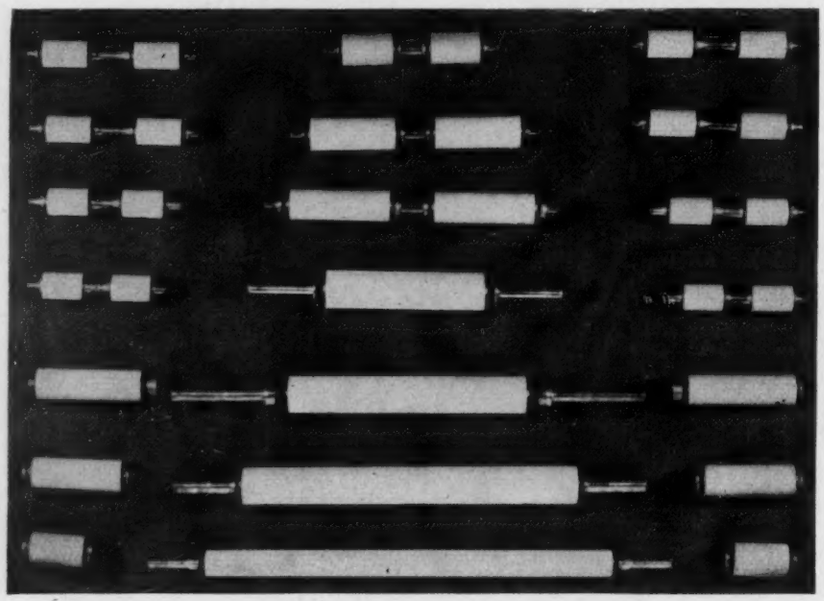
Of course, *every audit should be a Detailed Audit.* But whether it be *Detailed, Semi-Detailed* or *Balance Sheet,* it can, *and should be made to,* serve as the basis, not only of the financial report, but also for constructive help.

With the business man's appreciative understanding of this help, and the cooperation of progressive Public Accountants, Auditing becomes *Constructive* and offers its greatest value.

ERNST & ERNST

ACCOUNTANTS AND AUDITORS—SYSTEM SERVICE

AKRON, ATLANTA, BALTIMORE, BIRMINGHAM, BOSTON, BUFFALO, CANTON, CHICAGO, CINCINNATI, CLEVELAND, COLUMBUS, DALLAS, DAVENPORT, DAYTON, DENVER, DETROIT, ERIE, FORT WAYNE, FORT WORTH, GRAND RAPIDS, HARTFORD, HOUSTON, HUNTINGTON, W.VA., INDIANAPOLIS, JACKSON, MISS., KALAMAZOO, KANSAS CITY, LOS ANGELES, LOUISVILLE, MEMPHIS, MIAMI, MILWAUKEE, MINNEAPOLIS, NEW ORLEANS, NEW YORK, OMAHA, PHILADELPHIA, PITTSBURGH, PORTLAND, ME., PROVIDENCE, READING, RICHMOND, ROCHESTER, ST. LOUIS, ST. PAUL, SAN ANTONIO, SAN FRANCISCO, SEATTLE, TAMPA, TOLEDO, TULSA, WACO, WASHINGTON, WHEELING, WILMINGTON, DEL., WINSTON-SALEM, YOUNGSTOWN



Predominating!

Even felt cloths can stand out in their field, as is proven by the unanimous approval of "Philadelphia" throughout the textile industry.

Roller Cloths of the correct cushion and uniformity.

Clearer Cloths with thick strong nap that cannot pull out. Uniform length that clears rolls entirely of short fibre.

Slasher Cloths with enough cushion and porosity to thoroughly force sizing into yarn.

Philadelphia specializes in Stamping Blankets.

Our Southern Sales Manager, Clarence B. Seal, will gladly assist you on felt cloth problems. Address inquiries to Philadelphia.

PHILADELPHIA FELT COMPANY
FRANKFORD, PHILADELPHIA, PA.

Philadelphia *Felt Cloths*

PROVEN IN SERVICE

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

Make Full Packages—Yes. But Be Careful about Dirty Work!

This man painted filling boxes white inside so the fixers wouldn't put greasy nuts in them.

EDITOR COTTON:

Sometime ago there appeared in COTTON an article by R. A. Soniaman setting forth the advantages of making full packages. The author showed, by indisputable figures that from every angle it pays to fill all bobbins, spools, etc. I heartily agree with everything that he had to say in regard to this matter. I recall changing the lay gear on every spinning frame in a large spinning room of which I was third hand, resulting in an average gain of ten minutes per doff, and of course quite a few extra yards on each bobbin. Quite a bit of thought has been given this matter by machine builders in recent years resulting in machines with capacity for larger packages than were formerly made.

In connection with full packages there is an attendant danger of much spoiled stock from imperfectly made packages and dirt and oil getting on the outside in handling. So in order for the mill to reap the benefits of full bobbins it is necessary that everyone be on the alert to prevent the defects mentioned. Our mill, which makes heavy duck, spent hundreds of dollars to equip the weave room with extra large beam heads. I have seen more than one roll of cloth spoiled by reason of the warp coming in contact with a piece of greasy waste on the floor. This was materially reduced by wrapping the warps at the beamers with heavy paper and burlap.

A very prolific source of waste and annoyance is the tangled bobbin or spool. These are found to some extent on every machine on which bobbins and spools are built. Builders out of adjustment, lifting rods sticking, bobbins or spools on the floor preventing lifting rods making a full trip, bobbins not pressed down in place on spindles—these and other things as well may cause tangled packages. Another cause, and one more difficult to deal with than those just enumerated, is that of spools with heads of different thicknesses. This trouble is likely to happen on spoolers and twisters. For illustration, let us assume that the builder of a twister is set for a 5x8 spool with heads ½ inch thick, and a spool with heads ⅝-inch in thickness gets mixed in and is put on this frame. As the traverse is set for the thinner spool-head the yarn will of course run low on the thick spool-head causing a big-ended spool which frequently tangles.

As has already been stated, another obstacle to full packages is dirt and oil. Yarn being dropped on dirty floors, dirty boxes and other containers, grease from rings especially in twisting, warps and section beams coming in contact with dirt, oil and greasy waste on the floor are among the causes that might be named. Much defective cloth may be traced to these sources, especially in mills that use no size and finish their cloth in the grey.

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

While the remedies for all these defects are quite obvious, the experienced mill man knows that it is a constant battle, and if there is ever a let up, things are sure to go from bad to worse. In these columns, before, I have advocated a periodical inspection of all machines by the section man and the second hand. This should certainly help especially as to finding ring rails out of line, builders badly adjusted, lifting rods sticking etc. Constant alertness on the part of everyone concerned from the overseer down will materially improve the situation.

In regard to the spools and bobbins with heads of various thicknesses a special word would not be amiss. A standard size spool should be agreed upon. One spool that is a perfect fit together with a spindle should be kept in the supply room for a sample to be used in ordering. When an order is to be placed for spools, forward this sample spool with the spindle together with the order. Of course insist that the sample be returned. When the spools come in it will be an easy matter to check the spools with the sample. This may sound like a lot of bother, but much bad work would be avoided if more attention was given in this connection.

Floors should be kept as clean as possible, special attention should be given to the scrubbing of the floors. Containers should be kept cleaned out. Filling boxes in a certain mill were made of sheet metal and painted black on the inside. Sometimes in overhauling or repairing looms the loomfixers would use the filling boxes for the bolts and nuts as they were taken from the loom. These were usually very greasy and invariably "messed" up the box. Some of the fixers were thoughtless enough to allow the boxes to get back to the quillers without being cleaned, resulting in some oily filling. Someone suggested that the boxes be painted white on the inside, so of course no fixer would use a clean, white box in which to put greasy bolts, and oily filling from this source is almost a thing of the past.

These are only general suggestions, local conditions

make some of the problems more or less individual, however, if we want full packages we must be ready to combat its attendant evils.

CONTRIBUTOR NO. 4022.

Suggestions for Preventing Loopy Filling.

EDITOR COTTON:

Referring to the inquiry from "CONTRIBUTOR No. 4814" as to the probable causes of loopy filling on the face of warp sateens wherein he says "the difficulty is not loopy selvages, but small loops of filling appearing across the cloth on the face of the goods. The goods are 53 inches—96x64 warp sateen, with 18s warp and 12.50s filling, using a twist multiple of 3.79 in the filling."

The sample of goods submitted with the inquiry shows a number of loops of filling on the face of the goods, and some kinky filling on the back of the goods. From the general appearance of the goods, connected with the fact that there is this much kinky filling, I am of the opinion that the shuttle is bounding in the box, and that one harness may be out of line.

If "CONTRIBUTOR No. 4814" will check up on the following points and make any changes necessary, I feel certain that the trouble with loopy filling will be cured:

1. See that the harnesses are in line with a slope from the back to the front, and that no ribs are bent or unhooked.
2. Do not allow the harnesses to run too high above the race plate. Set the harnesses with the ends from the front harness only 1/16-inch above the race plate when the crank is on back center.
3. Use the binder spring, and the leather check strap, to check the shuttle. Do not have the box any tighter than necessary.
4. Use hair, or other friction, in the shuttle.
5. Take out all lost motion so the harnesses will not move jerkily.
6. Time on bottom center with the reed about 4 inches from the cloth.
7. Take all excess power off the loom, using just enough power to drive the shuttle across the loom and into the box.
8. Time the basket tape selvage to close on the filling just as soon as the shuttle gets out of the way, thus preventing the filling from slacking back and causing kinks.

CONTRIBUTOR NO. 4822.

EDITOR COTTON:

I note with interest the question from one of your contributors as to how to prevent loopy filling on the face of the cloth in a five-harness warp sateen. He stated that he does not mean loopy selvages, but small loops appearing across the face of the cloth, in the filling.

We have had some trouble of this kind from time to time, and it is my opinion that what your inquirer needs to prevent this is a cam that will break quickly. He undoubtedly is using a cam that is too lazy in the opening and closing of the shed. It would be my suggestion that he secure a set of 210-degree cams, making certain that the width of the loom is taken into consideration when securing them. I know that some mills get in a hole by using cams bought for narrow looms, on the wider looms, and this is a bad practice for sateens.

I would also suggest that he do not use excessive twist in the filling, and that he have the looms set so that the filling gets a chance to straighten out before the shed closes on the filling thread. Of course this will not eliminate all of the kinking, but by constant watch over the setting of the looms, I am sure this will improve his conditions.

CONTRIBUTOR NO. 4823.

EDITOR COTTON:

I would like to offer some observations in connection with the discussion as to loopy filling in 5-harness warp sateens, and the remedies for it.

As you know, in a 5-harness weave, you have three harnesses that are up and two harnesses that are in motion.

My idea on this trouble is that it can be remedied to a large extent in the shape of the harness cams. The two harnesses that are in motion must cross, and it is in my opinion desirable that the harnesses should be timed so that they will cross before the shuttle comes to a stop in the box, because then the shuttle is drawing the filling yarn, and when the shuttle stops it is likely to slacken the filling yarn. Therefore, it is preferable to have the harnesses cross before the shuttle comes to a stop, and also to have these harnesses cross quickly. The threads in the harnesses that are up should not be tight enough to cause the threads in the harnesses that are crossing to the slack. If these threads are slack, then a thread with a mote or a gout or a knot in it might loop around the thread next to it, or the thread next to it might loop around it, which would interfere with the filling sliding to the fell of the cloth in front of the reed between the two warp threads and cause these loops in the filling, or in the warp, as the case may be.

In connection with a cam to do the above, it is also desirable to have it shaped so as to give a more moderate start and an easier stop, as well as a quicker motion as the harnesses are crossing, in order to get away

Still another point which might be mentioned in connection with this difficulty is the use of what is called a filling motion friction device, which is a small it reaches its highest and lowest points.

bristle which works on the filling in the right hand shuttle box. When the box is arranged for its use, this friction device tends to hold the filling at the side of the shuttle, preventing its slackening and causing these loops as the shuttle goes into the right hand box. This device is so arranged that it is thrown out of action when the bobbin is expelled on the bobbin change.

It has been my observation that frequently this trouble of loopy filling may show up only on the right hand side or battery side of the cloth. The reason is that on the right hand side you have more filling pull-

ing off of the bobbin, and there is a longer strand, so to speak, to swing and cause these loops. It of course is evident that this will be more prevalent on the heavier filling numbers, because the weight of the yarn will give it more of a tendency to hang or swing down. from a sudden jerking or jumping of the harness when

CONTRIBUTOR NO. 4825.

Additional Discussion of Roving Breaking Back.

More ideas on how to prevent this difficulty, which, while apparently not important, can be very much so.

EDITOR COTTON:

I noticed in a recent issue of COTTON where "CONTRIBUTOR NO. 4775" asked what causes roving to break back in the spinning frame creel. This man has asked a pretty big question.

I believe one very prevalent cause of this trouble is lack of twist in the roving. Other causes are: roving trumpets becoming clogged up; spinning frame cree's becoming so dirty that loose lint collects on the roving skewers, causing them to be hard to turn; and low grade short cotton.

We have regular draft spinning, using 6.50 hank roving spinning 30s yarn out of low grade cotton. Our frames are double creel. I have never given our ends down per one thousand spindles a careful study, so I cannot say just what per cent are due to roving breaking back.

During the months of July and August we generally add a couple of teeth of twist. It is impossible to go by a standard twist, but it is necessary to keep constantly on the lookout and watch the twist carefully. As long as there are no hard ends coming from the spinning, there is not too much twist in the roving.

I believe that if our contributor will keep his trumpets and creels clean, and add a little twist to his roving, he will overcome his trouble.

T. H. (N. C.)

EDITOR COTTON:

I have just read the question pertaining to roving breaking back in the creels of spinning frames, as asked by "CONTRIBUTOR NO. 4775." I have had trouble along this same line, so it may be that I will be able to give some information that will be of value to our contributor.

Assuming that the creels are level and the skewers are okeh, there are two points that should be looked into thoroughly. The first is the diameter of the roving bobbin. This may not seem of any importance, but it really is.

I was having trouble here, so I complained to the boss carder. We took a few empty roving bobbins of different circumference and put them on the same speeder and when the roving came up I put it on the same frame. We found that the roving on one size of bobbin gave good results while that on the other size broke back at times. The boss carder explained that the tension gear was okeh for one size bobbin, while it was all wrong for the other, causing too much tension to be placed on the roving.

We also found that keeping a room too warm would cause roving to break back in the creels. The heat causes the fibres to be rather fluffy instead of compact, as they should be.

This has a tendency to weaken the strand considerably.

At present I am making 85s filling out of 10-hank roving, double, using the wooden middle roll. We use American cotton, 1 3/16-inch staple. I am also making 60s warp from 8-hank roving, using the same middle roll as used for my filling. We are getting very good results now.

If the aforementioned proves of any benefit to "CONTRIBUTOR NO. 4775", I would appreciate hearing from him. CONTRIBUTOR NO. 4855.

Controlling Bad Work from the Card Room.

EDITOR COTTON:

With reference to questions by "CONTRIBUTOR NO. 4759," I do not think this party should be so much concerned about methods of handling bad work from the card room; that is, slugs, black oil and so on. About the only problem I have of this kind is singlings, doublings and tangled roving. These, of course, we have to fight all the time at its source, and we have methods of identifying the responsible party on all bad work. We allow five bobbins per week per frame hand on bad work. Any operative running in excess of this amount is charged five cents each for the total number of bobbins made.

As to methods of taking care of other bad work, consisting of black oil, slugs, etc., I do not think a man should be satisfied with a job where these conditions exist. I know that they can be almost completely eliminated.

First, I would say that this contributor will find this black oil probably starting on his drawing frames. I would advise him to thoroughly clean his drawing frames at suitable intervals to keep them free of any tabs or lint or black oil in bearings. He will probably find most of this black oil off drawing coming from coiler heads. I would take these coiler heads out, thoroughly clean tracks and gears with gasoline, putting a very small amount of oil in the bearings only. I think he can get by nicely without oiling the coiler heads track at all.

He should be sure that all clearers on drawing are kept clean and should never let the clearer waste back up on top and bottom clearers enough to bite off and go through into the sliver. These bits of scavenger waste will remain in the stock right on through the spinning. After the drawing has been taken care of, probably 50 per cent of this bad work will have disappeared.

Now I would go through the fly frames, including slubbers, keeping the bobbin and spindle gears clean, the inside of bobbins clean, roller beam, top and bottom rolls, and again watch the top and bottom clearers and never allow them to load excessively. Carriages and flys, of course, should be kept free from any excessive accumulation. I would say to thoroughly clean each doff would do the job nicely.

This may seem rather a condensed suggestion, but it will take care of the trouble if these rules are religiously followed.

Lastly, I would urge every overseer to fight the excessive use of oil everywhere. I doubt if one per cent of the mills ever approach the correct method of oiling, and much damage is done by the use of too much oil.

I am satisfied that if these suggestions are carried out "CONTRIBUTOR No. 4759" can eliminate the system of paying spinners for taking out this bad work in the spinning, or at least cut out 95 per cent of the money it is costing him now. I have seen mills of 30,000 spindles make as much as 1,000 or 1,200 bobbins of this bad work per day and pay spinners $25.00 to $30.00 per day for taking it out. Personally, I think we should accept no excuse for such conditions, since they are all wrong.

I am not going to suggest further means of taking care of bad work after it is made, other than these described by which we keep up with our singlings and doublings, which is a simple matter of having different chalk colors or different marks for each operative.

CONTRIBUTOR No. 4763.

EDITOR COTTON:

Your "CONTRIBUTOR No. 4759" wishes some discussion as to how to control bad work which comes from the card room to the spinning room; that is, the slugs, black oil, etc., in the roving.

The first thing to do is to educate the speeder tenders. This can be done if approached in the proper manner. It is just as easy to make good roving as it is to make bad roving. One of the first essentials is for the overseer and second hand to always be near in their own practices and habits. If they do this the help under them will become neat and clean also. This has been proven by example and observation.

There are two main causes for excessive bad roving. One is too high a speed on the frames which causes the ends to break. When a frame is stopped to make a piecing, the operative is not making any money, and if this breakage occurs very often, they become discouraged and careless, hurrying and neglecting. A slower speed will increase production by reducing the percentage of stoppage.

Black oil is mostly caused by the person handling the roving not having clean hands. Sometimes a section man will have a break down and take out the gears, put them in a roving box and carry them to the machine shop. The next time this box is used for roving a great many bobbins will be marked with oil and grease. This should be watched carefully.

Slugs are mostly caused by clearer waste. This should be picked from the clearers often, starting right back at the draw frames. Another cause is blowing off with a paper or cloth during th eoperation.

I do not believe it is necessary to pay a premium for taking out bad work. This should be taught as a part of the spinner's work.

CARDER (MASS.)

Buyers I Have Met.

In which a salesman revives a discussion we all had a lot of fun with some months ago. If you have something on your chest, let's have it.

EDITOR COTTON:

'Way back in the August, 1928, issue of COTTON I read an article, and I must say a good one, entitled "Textile Salesmen I Have Met." In my humble way, I hope to relate the opposite side of the picture; that is, I would like to tell of buyers I have come in contact with. And right here in the beginning, I would like to state that some of the closest friendships of my life have been made by being able to meet some buyers, and some of the very closest of these are some who do not give me much, if any business.

First, we have the man who is quick to act. Upon greeting him, he allows you to state your business at once, and he immediately replies, "ship me so much," or quite often, "not in the market now." He then makes it plain that he is a very busy man and has no further time to exchange idle talk about the weather, business, etc. It is a case of, "sorry, but the interview is at an end; hope to see you again some day."

Second, we have the man who always welcomes a salesman, not every time with a large order, but, at least, with a cheerful greeting. He seems to enjoy discussing conditions in general of the entire territory covered by the salesman. I believe that in the majority of cases the buyer is richer by having had this interview too, for it is a fact that almost every salesman knows something that would benefit a buyer if he would only listen. Hence, by listening to this salesman who has gathered together facts that in many cases prove valuable from having called elsewhere, the buyer has a chance to obtain very cheaply something of value to him.

Third, we have the man of few words who is always very courteous and a thorough gentleman. Yet, he only listens and smiles and will never give the salesman a chance to show him anything by asking questions as to this point or that point. In short, he is so very nice, yet apparently so uninterested that the salesman is at a loss as to how to proceed.

Fourth, I have in mind the buyer who is not so pleasant to think about. I am sorry to say that there are still a few buyers in the world who try every way possible to insult salesmen. These men are the "know-it-alls" and it seems that all salesmen calling on this class of buyers always leave with a bad taste in their mouths.

I have in mind one or two men, former buyers, who decided they would like to try selling goods. One of these men in particular, after having been on the road a few months, was asked by a salesman how he liked salesmanship. He said at once that his business was poor and it appeared to him that every man on the road, especially those who used to call to see him when he was a buyer, were knocking him, which made it all rather hard. The fact is, the men on the road never stooped to knock this man, but on the other hand none ever attempted to give

him a boost. It just wouldn't have been human nature for them to have done so.

Being now past middle age, and having been calling on the trade for more than twenty years, I feel that life has been good to me. It is true that should I have stayed at home each night, instead of knocking about from pillar to post, the chances are that I would have been better off in a material way, but by so doing I might not have been able to form some of the acquaintances I now have, which I treasure very highly. I am also thankful for having met the few undesirables I have come in contact with, for it makes me feel so much closer to the others.

CONTRIBUTOR NO. 4792.

Further Opinions Concerning Starch on Loom Belts.

Two practical men tell why fixers put corn starch on the weave room belts.

EDITOR COTTON:

In the July issue "CONTRIBUTOR NO. 4768" asked, why do fixers put starch on loom belts. Being a fixer myself, I feel that I can qualify for answering the question.

We all know that a loom belt slips some, especially on the pick of the loom. When a loom belt becomes slacker than it should be, the slip becomes excessive. This excessive slip will cause a gum to form on the face of the belt, thereby causing the belt to "lope" and jerk. This jerking in the belt is transmitted to the loom and causes the loom to jerk.

I have found that by taking the belt up to the proper tightness and putting a little starch on it to overcome the gum formed on the face, after which the gum is wiped off, will prove very satisfactory. Of course many fixers will put starch on the belt and leave it slack. This is just a waste of time and should not be allowed at all.

On the individual motor driven loom, gear driven the friction allows enough slip to absorb some of the jar on the pick of the loom. The gear drive being positive, there is practically no jerk when the loom picks.

My practice on 40-inch looms is to have the belts tight enough to enable the starting of the loom without helping the belt along any when the reed is two inches from the fell of the cloth. C. W. (GA.)

EDITOR COTTON:

I read with a great deal of interest the letter in COTTON by "CONTRIBUTOR NO. 4768" entitled, "Why Do Loom Fixers Put Starch on Belts?"

From the wording of his article I gather that he is under the impression that starch is applied to belts for the purpose of producing slippage. I have used a good bit of starch in my rounds, but I have never used it for this purpose. I have never had any practical experience fixing looms, but in cloth rooms I have used starch to good advantage in cases where a belt has become so oily as to interfere with its best operation, and also in cases where too much belt dressing has been applied. In these cases starch will absorb the oil or dressing. It may then be brushed off, leaving the belt in good condition.

I think any loom should have some slippage in the belt. I do not mean by this that a loom will not run otherwise, but I do not believe that a loom will give as good results if there is no slippage simply because of the fact that the loom will be jerked to pieces if there is none. CONTRIBUTOR NO. 4849.

"Wash" Says "It" Depends Upon the Man.

EDITOR COTTON:

I was very interested in the article concerning college students and practical men, written by "CONTRIBUTOR NO. 4673" in the January issue. In closing his article he stated that he would like to hear from "OLD-TIMER" and "WASH."

Let me say that for the first time "OLD-TIMER" is put down as a great man—discovered at last. A great man is one that does most to help humanity, and many monuments stand today in memory of many great men that have done less than "OLD-TIMER."

I am of the opinion that knowledge and skill are two of the qualities of a practical man. His knowledge must include a good working knowledge of the materials with which he works.

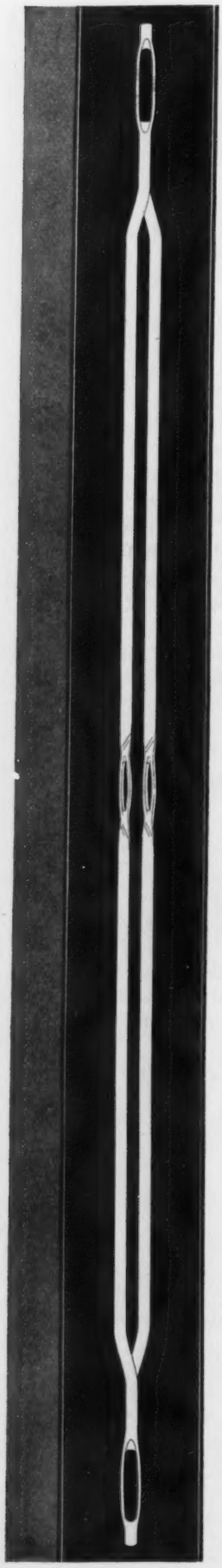
Remember what Mr. C. S. Tatum, of Raleigh, N. C., said in the report of the Henderson meeting, which appeared in the June, 1929 issue of COTTON? He stated that he happened to be one of those rare specimens who knew something about the spinning value of cotton, and that he had picked cotton out of a warehouse with the spinning qualities in mind, which enabled him to improve the breaking strength from eight to ten pounds. Such specimens are rare indeed and only long practical training can produce them.

When we hire a man we ask him what has been his experience, of how many months or years duration. I am afraid that too much consideration is given to the period of time the applicant has followed a certain trade. We should consider the success he has attained during that time, not merely the number of years he has served.

There is a vast difference in experience, as it is generally interpreted, and success. When we think of a person gaining experience we think of him as performing given operations. Then when we think of a successful person we think of a person performing some operation, if he is an operative, better than the average person could perform it.

Too many people are still of the opinion that successful work depends on the number of times the operation or work has been performed. This, however, depends mainly on the mental attitude of the worker in doing the work.

Let us take a simple mechanical operation: If a workman performs his work in a mechanical way, that is, unthinkingly, the chances are that he is not performing it in a successful manner. But on the other hand, if he can, by careful thought and correct manipulation of the various controlling levers, economize in time by eliminating unnecessary motions, his work has been successful, regardless of the number of times he has performed the operation.



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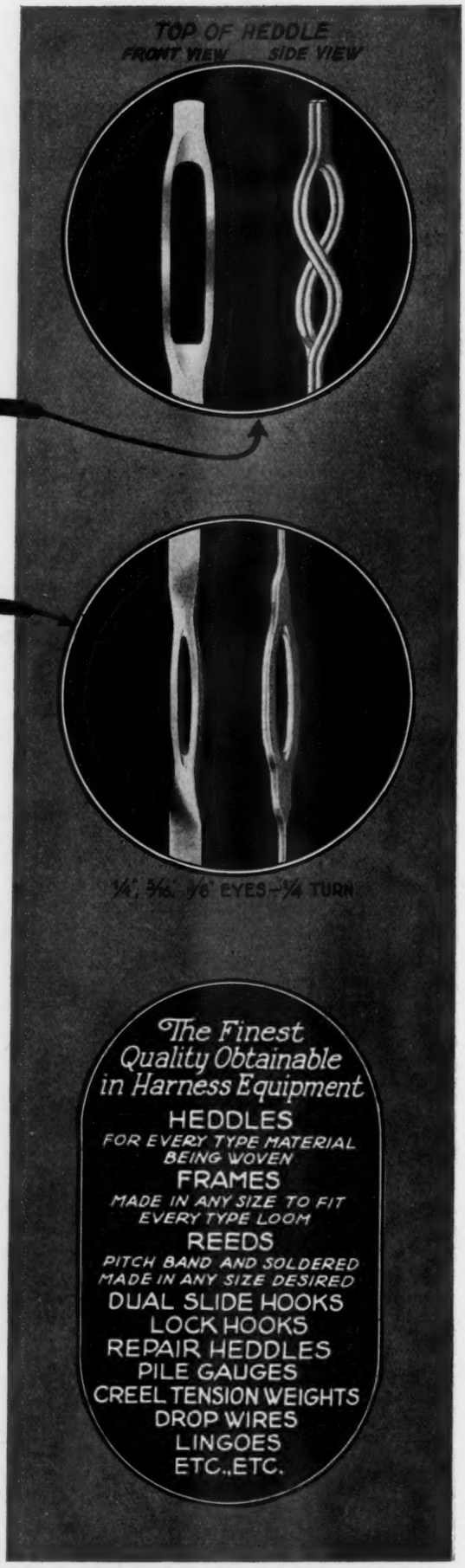

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In the first case, the worker is allowing his physical powers to gain precedence over his mental ability and in a short time he becomes as the machine he operates, merely mechanical. In the latter case, however, the worker is alive to his opportunities and makes every movement count.

I think the foregoing proves that "CONTRIBUTOR No. 4673" was correct when he said: "I do believe though, that the college student with three or four years of training and five years of practical experience would be worth more to any mill than a man with ten years of practical experience and no college training."

However, when everything said by "CONTRIBUTOR No. 4673" in his splendid article and that said by me in this article is taken into consideration, I believe that most of the readers will agree that success or failure really depends upon the man.

WASH (R. I.)

Which Puts in the Twist?

Still more ideas as to whether the traveler or the spindle does it. You can still join the discussion. Let us hear from you.

EDITOR COTTON:

I am glad to see the old question come up again as to which puts the twist in the yarn, the spindle or the traveler? This is like working a puzzle—it is hard to understand until it is worked out, then it is so plain that you wonder why it was so necessary to give it so much thought.

The traveler puts the twist in the yarn and the spindle hasn't any more to do with it than the belt that drives the frame. The spindle, bobbin and the yarn that is being wound on the bobbin are all used to transmit power from the band to the traveler. This is the reason we become confused at times and think the spindle puts the twist in the yarn. If there were a separate arrangement to drive the traveler on a spinning frame like there is to drive the flyer on a fly frame, there wouldn't be any confusion as to which puts in the twist.

I would like for the reader to visualize the yarn as a belt to pull the traveler. Then we will know that there are three things that will affect the speed of the traveler—the speed of the spindle, the size of the bobbin and the speed of the front steel roll.

The speed of the front roll and the spindle are the same at all times, regardless of the size of the bobbin. However, as the bobbin increases in diameter because of the yarn being wound on it, the speed of the traveler will change. Therefore, if the spindle puts the twist in the yarn, the twist should be the same at all times, but if the traveler puts it in, there will be a difference in the twist in proportion to the change in speed of the traveler. There is a difference in the twist in the yarn on a full and empty bobbin, but this difference is so small that it is not noticeable in the yarn itself.

We will consider, as an illustration, 30s yarn, and a front roll speed of 120 turns per minute. Say we want a minimum twist of 26.40 turns per inch, which is about standard for this number of yarn. The traveler would have to make 9952 turns per minute, as

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there would be 377 inches of yarn to be twisted per minute. This is to be wound on a bobbin 15/16-inch in diameter, hence it will take approximately 3 inches to go around the bobbin. Therefore, for every three inches of yarn the traveler must fall behind the bobbin one turn, or for 377 inches it would fall behind 126 turns. Therefore, the spindle will turn 9,952 + 126, or 10,078 turns per minute. The spindle speed being the same all the time, the speed of the traveler will increase as the diameter of the bobbin becomes larger. Thus when the bobbin is 1⅝-inch in diameter, which is about the size of the average full bobbin of 30s yarn, it will take four inches to go around the bobbin, and as there is the same amount coming from the roll per minute as there was when the roll was three inches in circumference, the traveler will make on this size bobbin only 94 turns less than the spindle. Therefore, the traveler will make 10,078 — 94 = 9,984 r.p.m. This would give a twist of 26.53 turns per inch, or a gain of about one-half of one per cent.

For further proof, I will compare the flyer on a fly frame with the traveler on a spinning frame. The bobbin and flyer on a fly frame are driven from a different shaft. This is necessary on account of the difference in speed that either the flyer or bobbin must have in order to take care of the roving coming from the rolls, and it must vary on account of the diameter of the bobbin. With the spinning frame, it is the traveler that runs at a variable speed, but on the fly frame it is the bobbin, and this causes the roving to have the same twist in it at all times.

Now if the bobbin and spindle put in the twist on the spinning frame, the bobbin and bobbin gear would put it in on the fly frame, for they do exactly the same thing as the bobbin and spindle on the spinning frame.

C. P. J. (S. C.)

EDITOR COTTON:

I will attempt to explain to "J. R. (GA.)" the two questions he recently asked about the traveler and spindle.

He first asked which puts the twist in the yarn, the traveler or the spindle. I will try to prove that the traveler is mainly responsible for the twisting. In Fig. 1 we will assume that *a* is the traveler. Now we all know the guide ring is over the center of the spindle and why it is. We also know that to twist anything we hold one end and turn the other. The rolls hold one end of the yarn as a starting point. Now if there is a guide in place of the traveler and this guide fixed, there will be no twist in the yarn due to the fact yarn will be drawn through the guide by the spindle without any rotary motion to impart twist to the yarn. If "J. R. (GA.)" will hold the traveler on a frame and turn the frame slowly he will see this point.

"J. R." also asked if the traveler and spindle put the twist in jointly. Yes, they do, for one is dependent upon the other.

He also asked if the traveler moves at a faster rate of speed when the bobbin is full than when empty. The traveler moves faster when the bobbin diameter is greater. Let us assume a speed of 10,000 r.p.m.

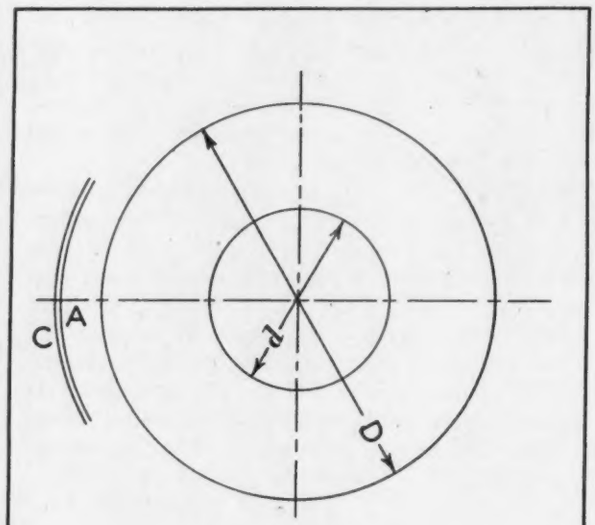

FIG. 1

and a delivery by the front roll of 394 inches per minute; also, an empty bobbin diameter of ⅝-inch and a full bobbin diameter of 1¼-inch. Then, by the following calculations we may answer his last question:

In Fig. 1 *d* equals the diameter of the empty bobbin, while *D* equals the diameter of the full bobbin.

$$\text{Therefore, } \frac{\text{inches del. per minute}}{\pi \times \text{dia. of bobbin.}} = \text{lag of traveler.}$$

Using the preceding formula, we can find the speeds of the traveler by the following calculations:

$$\frac{394}{3.1416 \times 1.25} = 100 \text{ r.p.m. lag when winding on } D\text{; hence, } 10{,}000 - 100 = 9{,}900 \text{ r.p.m. speed of traveler when winding on } D.$$

$$\frac{394}{3.1416 \times .625} = 200 \text{ r.p.m. lag when winding on } d\text{; then, } 10{,}000 - 200 = 9{,}800 \text{ r.p.m., speed of traveler when winding on the smaller diameter.}$$

Thus we see that the speed of the traveler increases as the diameter increases.

CONTRIBUTOR No. 4870.

EDITOR COTTON:

I was very much interested in the question recently asked by "J. R. (GA.)" as to which puts the twist in the yarn, the spindle or the traveler, along with the question he asked concerning the fastest speed of the traveler. He wanted to know whether the traveler moved the fastest when the bobbin was empty or full. I would suggest the following for "J. R.'s" consideration:

First, pick up a bobbin full of warp yarn and note the length of traverse on the first stroke and on the last stroke. Possibly it has a 7-inch stroke on the first traverse and 4 inches on the last traverse. The diameter of the bobbin itself is 1-inch, while the diameter of the full bobbin is 2 inches. Perhaps a 2-inch ring is being used on the frame. Note also the direc-

tion the bobbin would travel if it were on a spindle revolving; also, note in what direction the yarn is wound on the bobbin. It will be seen that the yarn is wound onto the bobbin in the opposite direction to that taken by the spindle.

Now let us take a filling bobbin full of yarn. We may assume that it has a 7-inch traverse and a stroke of approximately 2 inches. At the top of the stroke the yarn is, practically speaking, wound onto a bare bobbin which has a diameter of approximately ½-inch, and at the bottom of the stroke the yarn is being wound onto a full bobbin approximately 1½-inch in diameter. Using a spindle speed of 7,000 r.p.m. for both the warp and filling, we have the following approximate figures for variations in surface speeds: warp bobbin (empty), 21,980 inches; warp bobbin (full), 43 960 inches; filling bobbin (empty), 10,990 inches; and filling bobbin (full), 32,970 inches.

Let us assume a traveler is being used that is neither too light nor too heavy. The full bobbin of yarn has sufficient density.

The traveler for warp would show very little change in speed on warp wind at different sections or intervals of the stroke while the bobbin was being filled, but the traveler on filling would show considerable change in speed at the top and bottom of each stroke, due to the method used in building yarn on a bobbin for filling.

The traveler has to lag in its revolving; in other words, it must follow the spindle with slightly less speed in order to have the yarn wind on the bobbin. It is noticeable that yarn is wound tighter on a smaller diameter—due possibly to the angle of pull.

From the foregoing it seems to me that "J. R." should be able to answer his last question—that is, that on the larger diameters the traveler moves the fastest.

The writer does not know of any article that has gone into this subject so clearly as the article, "Theoretical Twist Versus Actual Twist," by Armand F. Bissonette, F. P. Sheldon & Sons mill engineers, which was published in the house organ of the Victor Ring Traveler Company some months ago. This article was reprinted in the September, 1930, issue of COTTON. This article would probably answer all of "J. R.'s" questions.

Now to answer the question asked by him as to which puts the twist in the yarn, the spindle or the traveler, I will say that I consider both very necessary factors for putting in twist. Possibly the variation in twist, (assuming the yarn is perfectly even in diameter, no thick and thin spots) if there is variation, would be due to irregular friction or drag on traveler. As to which of the two does the work, would probably only be a matter of opinion in that the traveler winds on and assists with the twisting. The spindle assists with the twisting and pulls the traveler by means of the yarn. What good would the twisting be if the yarn was not wound onto something and what could the traveler do in winding if it was not pulled around and twist inserted into the yarn?

The traveler also regulates the tension, but, on the other hand, if the spindle speed should be decreased

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or increased it would tend to alter the tension. Therefore, it appears that one means just about as much as the other. CONTRIBUTOR NO. 4871.

EDITOR COTTON:

Which puts the twist in the yarn—the spindle or the traveler? is the substance of the question asked by "J. R. (GA.)" in the July issue of COTTON.

I will say that the spindle is responsible for the twist, for as we all know, the spindle is driven from the cylinder, and if we wish to add or take out twist, what do we do? We change the twist gear which is driven by the cylinder gear. Of course the traveler has much to do with putting in twist, as it revolves with the spindle. However it is also governed by the spindle, so we can readily see that the spindle is the back-bone of all the twist.

Now this only represents one man's opinion. I would like to see what others think.

T. H. (N. C.)

Defects in Card Room Rovings.

EDITOR COTTON:

There are many defects present in speeder and intermediate rovings when these are presented to the spinning frames, and I would like to discuss in this article some remedies for these defects.

It is not possible to eliminate all defects during the spinning process; there is a possibility that they will pass into the yarn, therefore, and cause a great amount of trouble in subsequent processes. Much can be done at the spinning frames if the frame tenders are careful and conscientious in attending to their work, and this is naturally expected, but the real responsibility for defects in rovings is with the carding department, and it is the duty of those in charge of this branch to pay the requisite attention to the following points: quality and nature of raw material; suitability of machine settings and speeds for cotton being worked; drawing frame sizing; and degree of expertness of employees.

It is not possible in an article of this description to deal as fully as is required for a comprehensive analysis of the points mentioned, therefore, roving defects will be dealt with separately.

Uneven Rovings.

The primary consideration when dealing with a roving that is uneven in diameter is one of the quality and constitution of the cotton mix used. It is well known that when certain types of cotton are mixed together and each one varies in staple length to a marked degree, that a mixing of this description will produce an uneven roving, even though machine settings, speeds and methods of operation may be all that anyone could desire. A cotton mix that possesses an excessive amount of waste will also produce an uneven roving. These irregularities in roving will exist in the finished yarn, although doubling at the spinning frame will eliminate a certain percentage of them.

In dealing with the question of raw material it is apparent that the quality of cotton mix, and therefore the cost, should be the lowest that is commensu-

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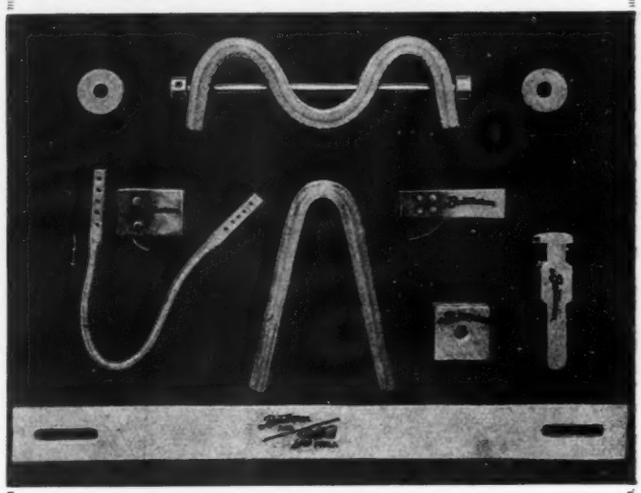

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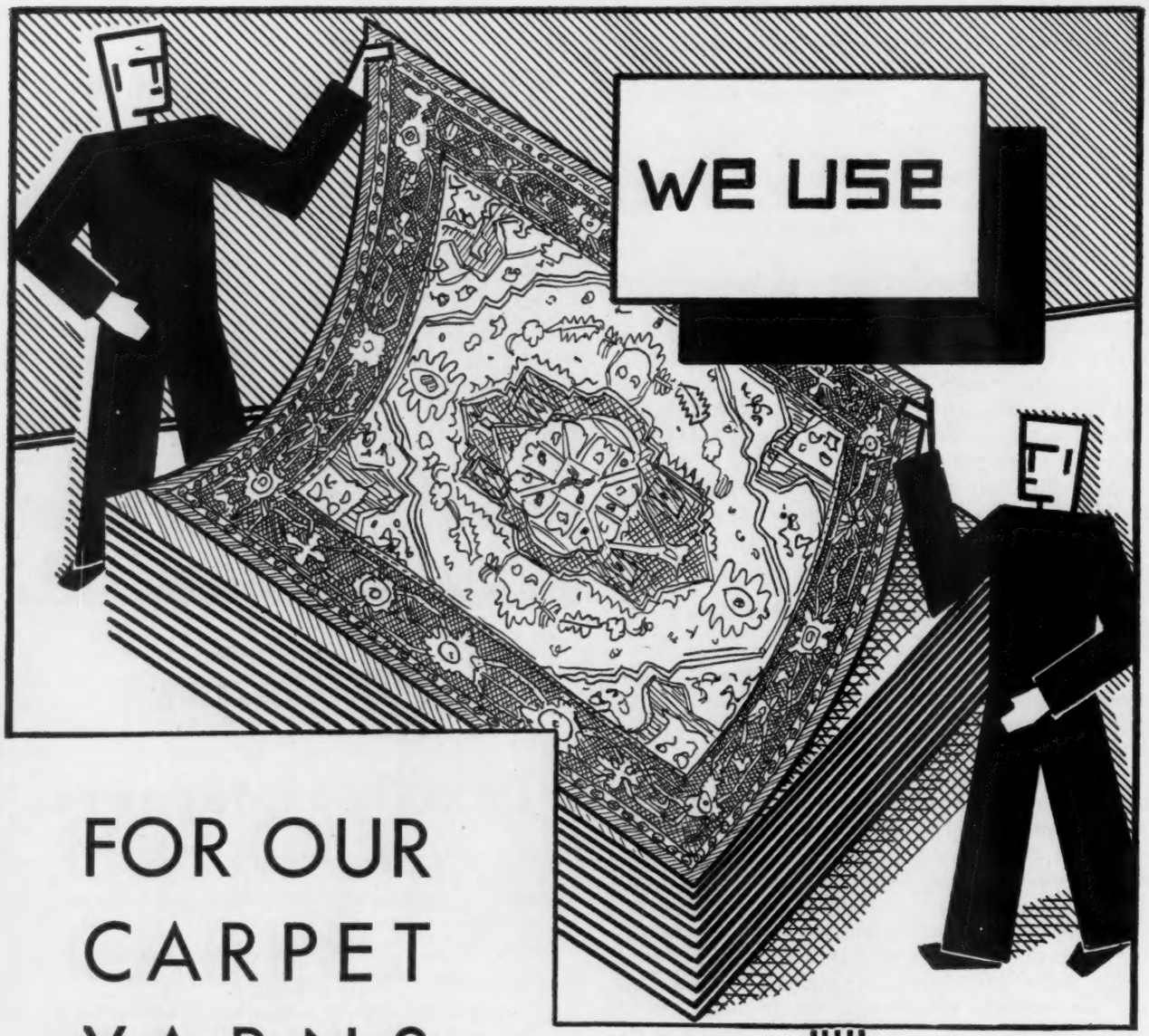

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rate with the desired quality of yarn. Assuming that the quality of yarn produced must conform to certain standards of appearance, strength, evenness, etc., then we must regard this as a fixed factor that must not be allowed to vary. A customer in purchasing yarn from the same mill at regular intervals desires a standard quality, and has no patience with a yarn that is good today and bad tomorrow. It is, therefore, the duty of the spinner to supply yarn of real quality all the time, and knowing the efficiency of his machines, as well as the approximate type of cotton required to give a certain quality of finished product, he should be able to do this. It will thus be seen that raw materials, machines and mill organization are closely linked together.

It follows also that if the maximum results are being obtained from machinery in regard to roller settings, speeds, etc., and the methods of operation are as efficient as possible, that the quality of raw material used will be lower, and therefore cheaper, than if methods of operation and machinery were of 80 per cent efficiency. We may then arrive at the conclusion that the quality of yarn produced must be standard, and that the cost of raw material can, to a certain minimum, decrease as efficiency of machinery and operations increase.

As the object of this article is to deal with the defects usually found in card room rovings, it will be assumed that a cotton mix of suitable value is being used and that the sliver from the drawing frame is as near perfection as is practically possible.

The action of the drafting rollers at the slubber is often responsible for decided unevenness in the roving. The bottom rollers, which are positively driven, should not be strained; each square should fit into its socket so that it is a tight fit and will run perfectly true. The flutes should be in good condition and free from accumulations of hard foreign matter. The top leather covered rollers are driven by frictional contact, therefore their rotation is not positive and anything tending to hinder their rotation should be removed. If the cap nebs are not set in line, these rollers tend to bind in their bearings. Worn saddles, lack of oil, accumulations of waste on the roller ends—all of this will cause erratic motion of these rollers. Solid double boss rollers not covered with the same thickness of leather, rollers in service after they have worn hollow and lost their grip on the sliver, and badly spliced piecings of roller skins will also cause this defect.

Stretched Roving.

Stretched roving may be due to the frame running for a considerable time with a broken end, and piecing up of ends on bobbins that are too small in diameter to wind correctly. The frame tender often tries to remedy this latter defect by putting on the spindle another partly built bobbin that is slightly larger in diameter than the others, thus causing the attenuated roving to stretch in accommodating itself to the increased diameter. In cases similar to this the overseer must insist that the tender doffs the bobbin and allows the spindle to run bare until doffing time. Of course the proper thing to do is to see that the ends are pieced up as they break.

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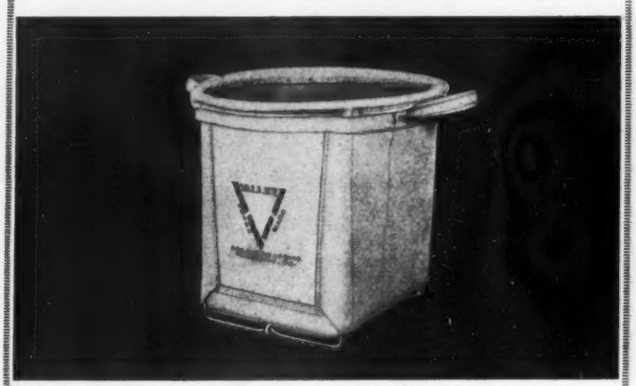

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Another cause of stretched rovings is unequal diameters of empty bobbins. When a frame has been started up after doffing, the winding speed can only be made to suit one diameter bobbin. If bobbins of excessive diameter are used the roving wound on will be stretched, and the ends will break frequently. All bobbins should be of the same diameter. When new bobbins are ordered it is well to specify that they be made according to a sample supplied by the firm ordering them. When new bobbins arrive they should be tested with a bobbin gauge before being put in circulation, and each one that does not conform to the standard should be rejected. It is advisable to keep to one firm of bobbin makers, I believe. I am also of the opinion that it is advisable to avoid buying second hand bobbins as far as possible. All empty bobbins when not in use should be stored in a dry place, and bobbins that are useless should be scrapped so that they will not be used by mistake.

Stretched rovings may also be caused by running the frame with an unsuitable builder wheel. The frame may start well and develop snapped ends at a later period, the tender having to periodically let out the rack to overcome this. A suitable builder wheel overcomes this difficulty.

Overtwisted Rovings.

Of course the main object of inserting twist at any of the roving frames is to bind together the fibers so that the roving will unwind without breaking when in the creel of the next machine. Very often it is necessary to insert a little extra twist owing to atmospheric conditions or to a sudden change in the nature of the cotton mixing. Generally, the minimum twist that can be inserted in accordance with the lowest number of end breakages at the frame, and suitable unwinding of roving in the spinning process, is desirable. Too much twist increases production costs, and the work of the spinning frame draft rollers.

Undertwisted Rovings.

Very often in striving to obtain a high production per spindle insufficient twist is inserted and this results in abnormal end breakages, which seriously reduces production. It is impossible to lay down a hard-and-fast rule concerning twist to be applied to any mill. It is necessary to be perfectly familiar with the specific conditions. The insertion of twist in the card room is a matter that must be determined by observation and experiment. It is then possible to strike the happy medium between over and undertwisted rovings.

Oilstained Rovings.

Oil stains on roving is an evil that is very frequently met with. A careful examination of the stains in roving that occur over a long period will be sufficient to convince one that most of these stains occur in the card room, and are generally due to careless oiling of the various parts.

When oiling rollers a special can should be used and the oil should leave the can in drops. The person responsible for this oiling should be constantly reminded of the necessity of taking every precaution to

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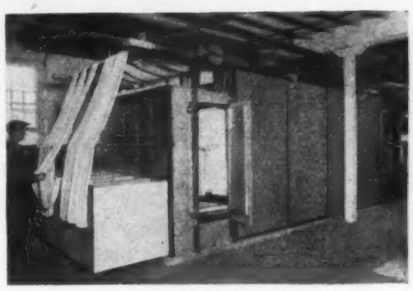

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In oiling spindles it is advisable to proceed in the following manner: At a certain doffing time the bobbins should be doffed and taken clear of the frame. The top of the lifter should be free from empty bobbins. The lifter can then be placed in its lowest position, thus exposing as much of the spindle as possible. An oily wad can then be passed over the spindle on the part where the lifter traverses, which prevents surplus oil being spread on adjacent parts of the machine during the revolving of the spindles. This is the only safe method of oiling spindles and the time lost in the operation is infinitesimal when compared with the benefits that accrue.

Bobbins that are empty should not be allowed to lie on the floor, nor should they be allowed to remain under the frame, as in both cases they are liable to become dirt or oil stained and placed on the spindles without special precautions being taken to make sure that they are clean. All cracked or broken bobbins should be scrapped immediately. Bobbin boxes should be kept clean and placed in such positions that oil droppings from overhead bearings will not touch them. Much can be done in preventing stains by careful frame tenders, who are alive to the evil results of them.

It may be mentioned that loose boss rollers should never be oiled from a can. It is not difficult to prepare a special tin with flanged sides that is equal in width to the length of a shaft. Two strips of flannel are placed in the tin and are soaked with oil. Several shafts are then placed in the tin and rolled in contact with the flannels. The middle portion of each shaft is untouched. This method insures efficient lubrication of the shafts, is faster than oiling by a can, economizes in the use of oil, and does not leave surplus oil on the shafts.

Slubs.

Slubs are one of the commonest of cardroom evils, and are not easily disposed of. It is hardly possible to enumerate all of the sources from which this evil might spring. Some of the most prominent are: Accumulations of fly picked up by the roving in its passage from the creel to the spindle; dirt and fly accumulations on the creel rods, traverse rail, rollers, flats, flyer eye, flyer leg and presser. When the ceiling and overhead driving shafts and drums are cleaned, a vast amount of loose fly is disturbed, so it is good practice to stop any nearby frames while this cleaning is being done. One can only advocate the greatest possible cleanliness of machinery and room if slubs are to be brought within a reasonable proportion. It is the only possible method of removing them.

Hard Piecings.

Hard piecings are caused by inexperienced or careless tenders giving the roving an additional number of turns of twist with the hands in order to thread the roving through the slot into the hollow flyer leg, before piecing the end. This piecing is sometimes made worse than usual by the operatives moistening the thumb and finger in order to twist the end of the roving into the attenuated roving issuing from the rollers. To prevent these piecings being made it is necessary to instruct new help to avoid the aforementioned evils by drawing all the extra twisted roving up the flyer leg and removing this so that a portion of the good roving can be joined to that issuing from the rollers and a sound piecing be made. Any old help that persists in making these bad piecings should be dealt with severely.

Mixed Rovings.

The consequent evils of mixed rovings are very well known, and although it is possible to mix rovings in the card room so that disastrous effects may be seen in this department, (I am speaking of the mixing of different slubber and intermediate hanks) the real trouble occurs when rovings of different hanks are put in the spinning frame creels in mistake for rovings of a standard hank.

When a mill is producing an extensive range of counts it is necessary to have speeder hank rovings of several different hanks. When several different quality yarns are being produced, such as combed, low, medium, high quality carded, and the same hank roving is used for two or more qualities, it is quite often found that mixing is taking place at the spinning frame. Yarn produced from mixed rovings often passed into the next process, causing a great amount of trouble. It is, therefore, of vital importance to devise some system for preventing the occurrence of roving and yarn mixes. The best method of preventing this defect is to take into consideration the shortcomings of the personnel of the department.

The writer has in mind a mill that was producing several qualities of yarn from a standard hank roving, and was constantly being troubled with yarn mixes. The mill employed a day and night shift. To overcome mixing, the mill employed an elaborate system of marking bobbins with different colored chalks. In theory the system was perfect. In practice it produced chaos. The help simply would not mark the bobbins properly and yarn mixes increased.

After giving the matter a great deal of thought, the mill management decided to use a different colored bobbin tip for each quality of roving. Special boxes were provided to accommodate the different colored bobbins, and each color was kept to its own box. Several penalties were imposed on those who mixed these bobbins and a determined effort was made to educate the help to the new system. Much expenditure was embodied in the purchase of new bobbins, but the beneficial results obtained quite outweighed this. Also, the rovings were free from chalk marks which are detrimental in certain classes of yarns. The trouble of mixed yarns practically disappeared in a few weeks.

Even when a mill is producing speeder rovings of five or six different hanks the system of using different colored bobbins works very well. In addition to these systems it is necessary for other precautions to be observed. Speeder bobbin boxes should be sufficiently large to accommodate one doffing of full bobbins without these bobbins being piled on top of the box, in which case there is danger that several bobbins will drop off the top and will perhaps be mixed with others of a different hank. Each box should have one bobbin that is ticketed, showing number of frame,

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It is interesting to reflect that throughout industry, modern management increasingly recognizes the dollars and cents value of this practical idealism. Workmen's compensation, with its aim toward peace and good-will, banishes costly law suits and unjust jury awards. Safety campaigns and devices do the same — along with saving life and limb. Insurance plans, welfare work . . . all could well be called the Christmas spirit extended the year around.

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hank roving, and any other necessary particulars.

Of course it is also necessary that adequate precaution against the mixing of rovings be taken in the spinning room. Much trouble can be caused in this department if the bobbin boys who place the rovings on the creel do not do their work properly. The responsibility for this rests with the spinning room.

Defects in the Build of Bobbin.

Tight winding is due to the drum strap not being set properly. Reference was made under the heading of "Stretched Rovings" to the frame running with an unsuitable builder wheel, but this defect is separate from the one mentioned here, although it may be considered to give the same results. If the winding is too tight during the time the first layer is put on the bobbin, and the frame has the correct builder wheel, then the rovings will be stretched throughout the entire set. When excessive breakages occur due to this defect a remedy is sought by putting extra twist in the roving. This decreases the breakages but cannot possibly eliminate the stretching.

Slack Winding.

Slack winding is brought about by incorrect setting of the cone drum strap forks and produces a soft bobbin with a tendency for the coils to slip off the end of the bobbin, causing the roving to break when running off in the spinning frame creel. Both slack and tight winding can be remedied by finding the exact starting point on the cone drums that will give a good wind on the empty bobbin. If the strap is in the correct position on the cone drums when starting a new set of bobbins and trouble is experienced later in the set, then it can be assumed that a wrong builder wheel is being used.

Uneven Tapers.

The remedy for uneven tapers is to reset the builder motion connections. This can be done in the following manner: At doffing time an empty bobbin is marked exactly in the middle and placed on a spindle. It can be placed on any spindle providing the lifter is level and all the spindles are the same height. The lifter rail must be adjusted so that the spindle flyer eye is exactly over the mark on the bobbin, thus assuring us that the lifter rail is in the middle of its traverse. The poker bar can then be set level. The slide in which the poker bar moves must also be set level. When these settings have been made the screws that actuate the pigeon lever catches should be set so that they change the direction of the lifter rail at the exact places, both at the top and bottom of the bobbin.

CONTRIBUTOR NO. 4818.

Strange, but after a man has had several jobs he generally settles down on the size job which compares with his ability. Have you settled? If you have, remember that a man can practically make himself over by constant application and study. Come out of it!

The pathway to a better job is generally sprinkled with perspiration.

"Jack" Discusses "Achers and Acres."

Here are the views of a man in Texas on a subject which was brought up by a contributor on page 666 of the April issue.

EDITOR COTTON:

In his timely article entitled, "Achers and Acres," which appeared in the April issue, "CONTRIBUTOR NO. 4668" opened up a very delicate subject for discussion. In this article he very cleverly presented a young man who, possessed wonderful ability from a mechanical standpoint, but as a leader of men was a total flop. It was too easy for him to find fault with his superiors, he said.

Someone has said that there are always three sides to any question—your side, the other fellow's side, and the right side. The writer shall try to discuss at least two sides of the subject under consideration, and in so doing, it is not my desire to cast any reflection on able "CONTRIBUTOR NO. 4668."

He admits himself, and I think lots of others will agree with him, that some of the "achers" get to the position of overseers and superintendents before they are found out. In other words, they are promoted by mistake, and throughout this article I shall refer to this class of men as "mistakes." Now these "mistakes" will be the first ones to grab the article on "achers," and "acres" and will have a lot of "achers" to read it. It is a weapon in defense of the "mistakes"—that is, the "mistakes" will so construe it—and they will show it off to some of the "achers" in an attempt to curb free speech.

These "mistakes" will openly criticize the governor of their state, and even their county officials, and the government in general. Just let the government mention the curbing of free speech and see what a yell these "mistakes" will put up. Yet they must curb free speech in their mills or they may be ruined. You see it still makes a difference about whose bull gets hooked. Textile workers are going to talk; that can't be stopped. So it is up to us to furnish something for them to talk about. If you want the talk to reflect credit to you and your job, then be a credit to your job, both morally and physically. You must show the right kind of management, and you must live above reproach. Show me a man that will let someone out, or will not hire someone back, just because that person talks too much, yet on the other hand will bail a drunken weaver or loom fixer out of jail and put him back to work, and I will show you a man that is heckled with "cotton mill gossip". Some of these "mistakes" know this very thing has been done, others will perhaps be shocked at this. It's a shame to the industry.

A quotation from "CONTRIBUTOR NO. 4668" read: "Whereas he should be teaching loyalty to the people who are working under him, he has never taught himself." Why didn't somebody else teach him instead of depending on him teaching himself? This "acher" in question, according to "CONTRIBUTOR NO. 4668," possessed all of the qualifications necessary to make a very valuable man—except for the fact that he talked too much. He is honest, and everybody likes him; but —because he is not afraid to say what he thinks; be-

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cause he is open and above board—he cannot run the gauntlet of "mistakes" and land at the top of the game. And they want him to come back and confess his wrongs. If I were not afraid to say it, I would say I hope he sees 'em in Hades first, but as a man's job depends on what he says at times I will refrain from expressing my thoughts on this particular phase of the subject.

I am not talking about "CONTRIBUTOR NO. 4668" in particular, but about typical cases in general. No doubt some will brand me as an "acher"—well, I have been without a job one time in twelve years, and only for three days that time, and I did not get fired that time. You don't find "achers" with that kind of record.

I think it would be well for more superintendents to pay more attention to "cotton mill gossip," as they term it. A superintendent hears some sort of story about an overseer, perhaps some employee goes directly to him about the conduct of an overseer, and the superintendent pays no attention whatever to it, or perhaps he may pretend to investigate, but in the windup he will term it "cotton mill gossip" and let it go at that. It does not take very much of that for a superintendent to get himself lined up for his share of the gossip. It has been said that we are known by the kind of company we keep, in other words our reputation hinges on the crowd we keep around. So it must follow that a superintendent is sized up by the kind of men he keeps around him. If he cannot keep an overseer that commands the highest respect of the people about him, or if he persists in keeping an overseer that does not have the respect of the people in the community, then what can he expect the overseer to keep in the mill? What then can he expect the people to think about him? He will have people going to the "acres" every year. His labor turn-over will be too high. He will constantly have a bunch of "learners" on the job, and as soon as they become proficient in their jobs they will have acquired enough knowledge to be a dangerous enemy to the overseer, should he happen to incur their disfavor, and so it happens that for some reason or other they get out. And when they do, well it's goodbye, for the overseer can tell you how disloyal they were, and get away with it too. No sir! he will never work that man or woman again. But, if a man comes along, no matter how many times he has quit the job before, if we know as much on him as he knows on us, he gets the job. And when he wants to quit again he just quits, knowing full well that he will have a job when he returns. This is the kind of a mess we will have if we persist in terming everything we hear "cotton mill gossip" and let it go at that. And then we wonder why we don't get anywhere.

Now I have no hope of reforming these "mistakes", in fact I don't think it can be done. But I do think our young men can profit by watching these "mistakes" and then not doing what they do. You must have a few ideas of your own. And to succeed, your ideals must be high. And remember, you do not get anywhere by knocking. You must "bridle your tongue," so to speak. When you talk about the management, if you do not boost it, no matter what the condition of

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things are, then you are knocking and you do not better things by knocking, in fact you hurt yourself. And you are the only one you do hurt. For to the "mistake" it's "cotton mill gossip" and that's all there is to it, and you can't change it.

So we must buckle right down on the job, and not participate in idle gossip or repeat the things we hear. We will really be better men for it. And our chances of promotion will be greatly enhanced. All overseers and superintendents are not "mistakes." The "mistakes" will be weeded out just as fast as competent men grow up to take their places. If we do not take advice of men further up in the game, then we had better be sure we have something better, if we would succeed. When we finally land on top, then we must indeed be careful, for we have a great responsibility before us. We must not think that because we are on top now the sailing will be easy. The people have their eyes on us and we must respect ourselves and our jobs enough to live up to the expectations of the men that promoted us. And one of the first, all the time, and last things to do is—get ourselves and our jobs talked about. But we must be sure that we live and handle our jobs so the talk will be a boost and not a knock. When we run ourselves and our jobs right, there will be one thing we will not have to do, and that is to go around and teach people to not talk about us. And that will stop the "cotton mill gossip."

Now it's for us to decide who the "achers" are. If we are "achers," then let's stop it. If we are the cause of pain, let's stop that. Let's not be afraid to say what we think—but, if we think it is going to hurt somebody, let's not say it unless it is absolutely necessary. We must respect the position our superior holds. We must not try to push him down in our efforts to climb. If we would reach his position, or one higher, then we must make ourselves better than he, and in that way we will do no one an injustice.

JACK (TEXAS.)

Causes of Hard Ends on Intermediates.

EDITOR COTTON:

I noticed in a recent issue where "CONTRIBUTOR NO. 4726" is having trouble with hard ends on his intermediates. He stated that he is running 15/16-inch cotton and that his steel rollers are set 1 1/16-inch.

Having hard ends on intermediate frames is nothing new. This is due to the fact that these machines must draw the heaviest twisted strand in the cotton mill, and this is why the shortest possible draft should be maintained on these machines. It is well to remember that the longer the draft, the greater will be the work on the top rolls, which increases the friction.

I would try to remedy the trouble of "CONTRIBUTOR NO. 4726" as follows:

(1) Assuming the twist on the slubber to be .85 turns per inch, the first thing I would do would be to change the ball bearing front rolls to the back line. I would have solid top leather rolls on the first and second line of rolls.

(2) I would set the front top leather rolls about ⅛-inch forward of the center of the bottom steel roll

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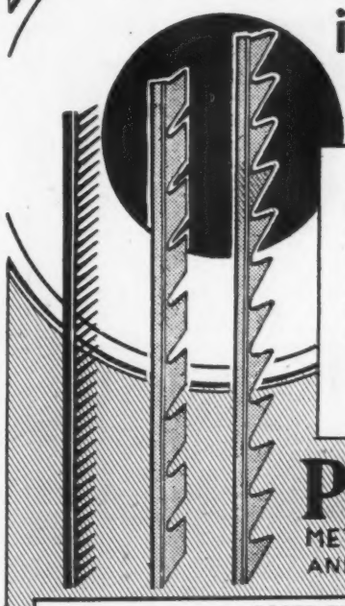
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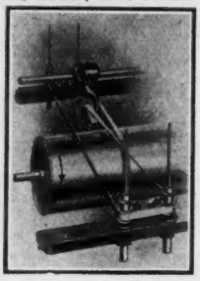

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and do likewise on the second line of rolls. The first and second rolls should be 1⅛-inch from the bite of each roll. A setting of 1 1/16-inch is too close for intermediates.

(3) I would have a wire hook for a stirrup. If this is not possible, I would file the present stirrup down to the same working area. In other words, in order to give a solid roll freedom to do its work, the bearing on the neck of the roll should be as narrow as possible. Frictional contact exists on all leather top rolls even when no stock is under the action of these rolls. One might ask the question, why put the expensive ball bearing rolls on the back line? Simply because the solid roll has almost twice the drawing efficiency of the shell or ball bearing roll.

In many instances hard ends are caused by wiry fibers mixed with weaker ones. Hard ends result also from running humidifiers to the saturation point, and by having settings too close. However, if "CONTRIBUTOR NO. 4726" will try some of the suggestions I have offered, I believe he will rid himself of his trouble.

Now let us picture what takes place between the rolls to cause a hard end. If the setting is right, then the strand fed must either contain too much twist, too much bulk, or is too wiry. If the strand fed is properly twisted, we should look to see if the cause is in the hank fed, and if we find this to be the case, we should make it lighter, which of course is more expensive. But if the stock is wiry, we must find some way to run it.

Hard ends are also caused by the lagging of the top leather rolls. The top roll, therefore, has more than it can handle.

In considering the drawing efficiency of ball bearing or shell rolls, it must be realized that each shell must do its own work. Therefore, if a wiry fiber comes under the action of the rolls and dwells just enough to spoil the work, it may make a hard end that will whip down many others. While this is going on, the shell on the same arbor will go on and cause no trouble. When wiry stock, a heavy strand, or a strand having excessive twist comes under its action, the frictional power is only one-half that of the solid rolls, and of course the speed of the roll is checked. On the other hand, the solid roll having the double frictional working area is not checked and proper attenuation of the fibers takes place. It is all in the frictional driven power. In the case of ball bearing or shell rolls, the power is separated, while in the case of the solid roll it is not. That is why we get more hard ends with ball bearing or shell rolls. Any kind of roll will do for the back line.

Setting the top roll ⅛-inch forward of the center of the bottom steel roll gives the roll a finer grip on the stock, due to its tendency of falling at all times. Such a setting also prevents chatter that causes a back and forward movement in the cap bar. By the roll having a firmer grip, the frictional loss is much less.

In order to be sure that the reader can see clearly what I wish to convey to him, let me put it this way: If a wiry fiber is just strong enough to slightly check a single boss on either ball bearing or shell rolls, it is certainly not strong enough to check a solid roll having double frictional power. WASH (R. I.)

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1. Cotton Picking, Carding and Spinning—Covered by three different catalogs. Picking catalog covers Opening and Picking Machinery; Card Room catalog covers Cards, Combers and Roving Frames; Yarn Machinery catalog covers Spinning, Twisting, Spooling, Quilling and Reeling. By Whitin Machine Works, Whitinsville, Mass.

2. Pepperell Equipment—10 page illustrated booklet, showing High Speed Warping from cones as adopted by Pepperell Manufacturing Company after thorough experiments. Installation and product photographs. Issued by Universal Winding Company, Boston, Mass.

4. New Methods of Opening Cotton, also "Brown" Automatic Mixing and Cleaning Distributor—Illustrated booklets showing advantages of Centrif-Air Cotton Cleaning System. Pamphlets also on better picking and carding and pneumatic trunk line cleaner. Issued by Centrif-Air Machine Company, Atlanta, Ga.

5. The Bahnson Master Control—Bulletin No. 301, 5 pages. Illustrated. Automatic device designed to control humidifying equipment so as to maintain a constant relative humidity. By the Bahnson Company, Winston-Salem, N. C.

6. "Cotton" Weather Vein, 32 pages; "Rayon" Weather Vein, 40 pages; house publication, illustrated. Bulletin 58, 80 pages, illustrated; Manufactured Weather—the automatic control of air conditions within buildings. Carrier Engineering Corporation, Newark, N. J.

8. "Textile Brushes"—10 page booklet illustrating brushes for cleaning every part of mill. By Gastonia Brush Co., Gastonia, N. C.

9. "Custom-Built" Motors—Complete set of bulletins covering various types of electric motors for textile master mechanics and executives. By Louis Allis Company, Milwaukee, Wis.

10. Leathers, Textile—Booklet No. 101, 48 pages. Illustrated. Showing BONDARON Check Straps—Lug Straps—Harness Straps—Pickers—Belting, both round and flat, etc. Horsepower tables and other interesting information. By Charles Bond Company, 617 Arch Street, Philadelphia, Pa.

11. Whitinsville Rings—16 page illustrated booklet. Describing ring manufacture, measurements, types, uses. How to determine flange sizes. By Whitinsville Spinning Ring Co., Whitinsville, Mass.

12-A—Instruction Manual for Type K Bobbin Cleaner. Also, Instruction Manual for Utsman Bobbin Cleaner—two separate booklets describing adjustments of machines outlined, and also describing effect of bobbin shapes upon the cleaning process. These booklets intended for users of machines outlined. Applicants should designate which booklet is desired. By the Terrell Machine Company, Charlotte, N. C.

12-B—Instruction Manual for the Termaco Roving Bobbin Cleaner—booklet in four sections on adjustment of machine; on how to use machine to best advantage in reducing waste and saving labor; parts catalog; description of new attachments which can be applied to earlier models of the machine. By the Terrell Machine Company, Charlotte, N. C.

13-A. Equipping Modern Textile Plants—Booklet, 35 pages, illustrated. Describes value of Monel Metal equipment in textile plants and presents reports from mill owners and operators on actual experiences; equipment, descriptions, etc. **Also Dyed in the Truth**—Reprints of advertisements of special interest to textile dyers. International Nickel Company, Inc., 67 Wall Street, New York, N. Y.

14. Emerson Conditioning Ovens—2 booklets on conditioning of textiles, or determination of the amount of moisture in textiles. Issued by Emerson Apparatus Co., Melrose Highlands, Mass.

15. Saving Labor, Material and Power in the Textile Industry—Bulletin No. 133. Illustrated. Controlling, Recording and Indicating Instruments in textile mills. Temperature, Pressure, Humidity, equipment layouts and descriptive applications. The Foxboro Company, Foxboro, Mass.

17. The Powers System of Thermostatic Control—"Slasher Room is Bottle-Neck of Textile Mill." 18 page illustrated booklet showing importance of proper treatment of cloth in slasher room and advantages of Thermostat over hand control. Also room temperature control illustrations. Issued by Powers Regulator Co., 2739 Greenview Ave., Chicago, Ill.

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20. Bleaching, Dyeing, Finishing and Printing Textile Goods—70-page booklet containing interesting information on faults and methods in finishing goods, useful tables and definitions. By Bosson & Lane, Atlantic, Mass.

21. Warp Sizing and Composition of Cotton—Folder containing reprints of articles carried by textile publications of interest to progressive mill superintendents. By Seydel-Wooley Co., 748 Rice St., Atlanta, Ga.

22. Tragasol and Its Uses—Booklet, 60 pages, constituents and properties—Dissolving and preparation—sizing and dressing of yarns—cloth finishing—miscellaneous. By John P. Marston Co., 247 Atlantic Ave., Boston, Mass.

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36. Hosiery Inspection, Seamless and Full Fashioned—Illustrated folder. Also describes new Leg Examining Machine for full fashioned ladies' stockings. Edward R. Ammon, Reading, Pa.

38. Sleaziness in Full Fashioned Knitting—Illustrated survey with samples of fabric showing causes of sleaziness, and methods to be employed in eliminating it.—By Textile Machine Works, Reading, Pa. (This company also issues parts catalog of Reading full fashioned machine with general information on subject of full fashioned knitting.)

39. Trend of Sales of Silk, Rayon and Cotton in the Piece Goods Departments; twenty-four-page booklet; prepared by DuPont Rayon Company in conjunction with National Retail Dry Goods Association. Copy furnished without charge by either of above. DuPont Rayon Co., 2 Park Ave., New York, N. Y.

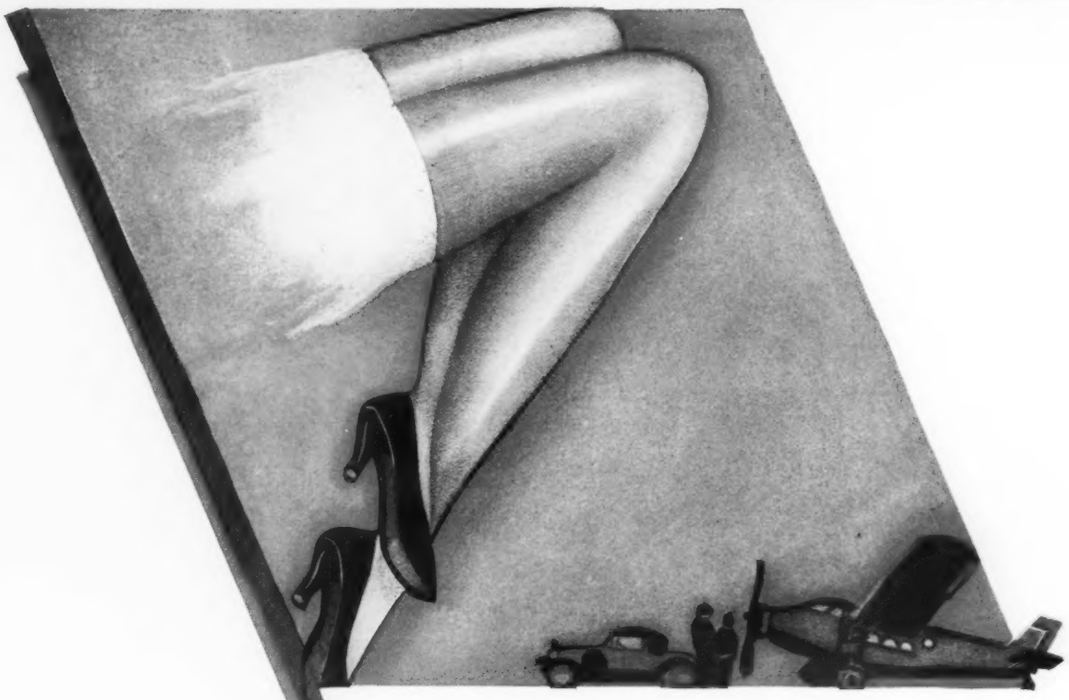
40. The New Competition in Color—20 page illustrated booklet. Discusses future trends in business and their significance, present trend toward fast colors in textile industry and opportunity this trend offers for increased profits is properly utilized. By Franklin Process Co., Providence, R. I.

41. Budget Control—40-page booklet showing how each part of business budget should be prepared and principles of its effective operation together with a summary of benefits.—by Ernst & Ernst, accountants, 27 Cedar Street, New York, N. Y. (This company also has available booklets on **Standard Costs, Business Control Through Analysis, The Better Wage, Factors to Consider in Working Out Mergers.**)

42—Textiles and the Telephone Typewriter—6 page booklet on telephone typewriter service for communication between mills and selling houses. By American Tel. and Tel. Co., Long Lines Department, Atlanta, Ga.

44. Points of Interest in and Around Atlanta—36 pages. Illustrated, describing places of scenic and historic interest in Atlanta in particular, and the Southeast in general. Atlanta Biltmore Hotel, West Peachtree, Fifth, Sixth & Cypress Sts., Atlanta, Ga.

Knitting Section



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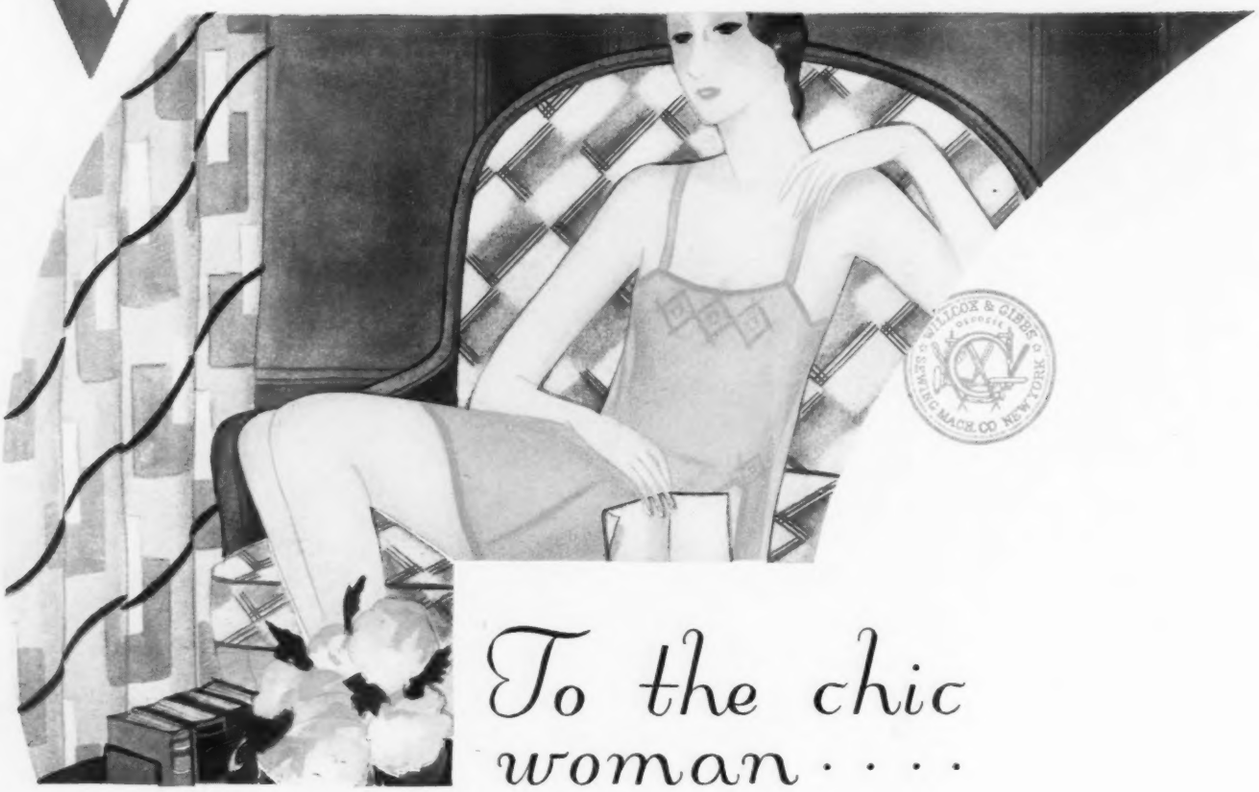

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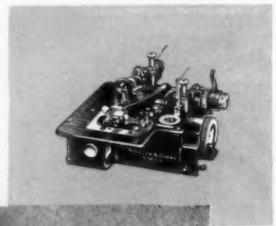

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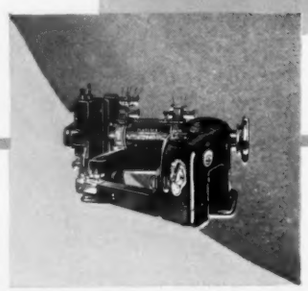

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Sizing Hosiery *from* FULL-FASHIONED MACHINES

By B. D. Gaddy, Superintendent
Knitting Department,
Golden Belt Mfg. Co.

IN DISCUSSING the problem of preventing uneven lengths in hosiery, Mr. Gaddy declares that it is inaccurate to use the yardstick in sizing stockings in the gum from the machine. Also, he discusses the impracticability of using the pick glass for counting courses.

He then describes a method of sizing which he has found to be accurate and practical.

His discussion of this common problem will interest every full-fashioned manufacturer.—THE EDITOR.

A SUBJECT of much interest to all full-fashioned hosiery manufacturers is the question of sizing machines to produce uniform fabric of uniform length. The best place to get a fairly accurate estimate of the efficiency of a knitting room is to inspect the boarding room. Some manufacturers, realizing this fact, have put the emphasis on the boarding and have tried to make the boarder correct the defects in the knitting.

When you hear a knitter finding fault with the boarder about his short stockings or charging his crepy or sleazy fabric up to the dyer, you can always discount the knitter. Theoretically, all stockings should be pulled on the board with the same tension to reach a given length and with perfect knitting this would be possible, but since perfect knitting is impossible, the boarder is required to make limited adjustments to compensate for slight variation in the knitting, but these adjustments should be so slight as not to noticeably affect the texture of the fabric.

Any manufacturer who is attemping to correct a variation in his knitting lengths of two inches by pulling the long ones easily and the short ones taut is doing a poor job. The shrinkage on the stretched stocking is so much greater than on the stocking boarded with the proper tension. The two mated together will not stay mated and if they get by the merchant, the wearer finds the defect after laundering one time.

"The Folly of the Yardstick."

So, the solution of the problem is better sizing on the knitting machines. All knitters' benches are equipped with yard sticks for measuring stockings as they come from the machine. Just what advantage there is in this I have never been able to see. So far as I am concerned, the yard sticks are totally useless. You can never tell what a stocking in the gum will do until after it is dyed and boarded. One stocking measuring 27 inches in the gum may finish longer than another measuring 29 inches in the gum.

You can measure a set of legs from a given machine knit from fairly dry silk, then knit a second set with fresh wet silk from the same machine, and the second set knit from wet stock will measure two inches longer, yet both sets will board about the same length. The difference is in the stretch of the wet stock in knitting. An 8-thread stocking can be knit from 3 to 4 inches shorter in the gum than a 4 or 5-thread.

Another example of the effect of stretch can be illustrated by adding one more weight to the ware roller weights and make the set an inch longer. Then again, if one head is knitting too tight, this tight stocking is carrying more than its proportionate load of the ware roller take-up, and is unduly stretched and comes from the machine about the same length as the rest of the set, and its narrow width is not shown by the yard-stick. So, for these, and other reasons, we can see the folly of the yard-stick.

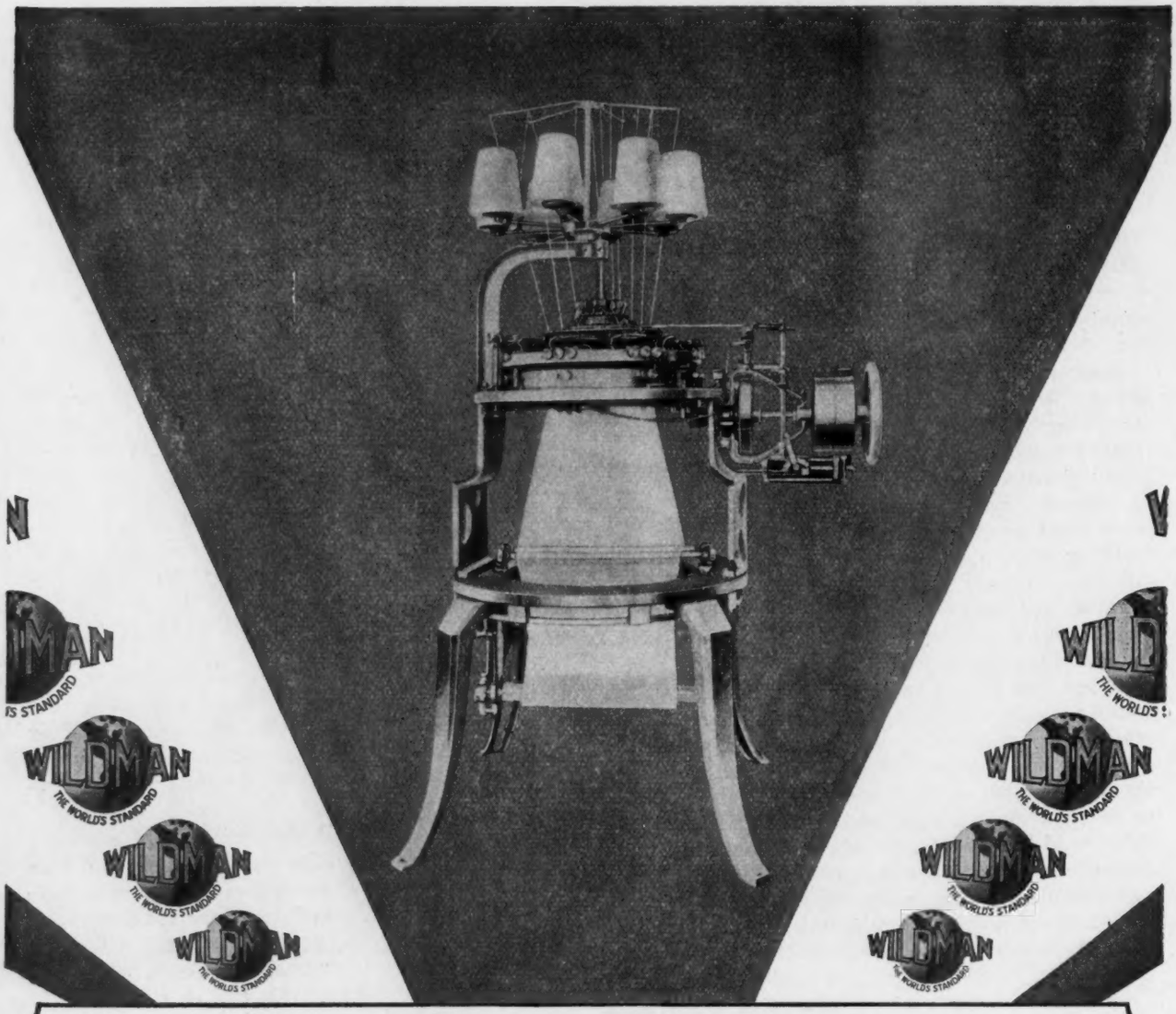
Objections to the Pick-Glass.

So then, if we abandon the yard-stick, and turn to the pick glass, what do we find? Those who have suffered the eyestrain and headache from counting courses trying to find two stockings that will check the same number of courses throughout, will vouch for the unsatisfactory results of this method. The same stocking will vary as much as two courses over a space of six inches. That section of the stocking knit when the welt rods are coming up will count tighter than the section knit when the welt rods are going down. The ankle, due to narrower width, and extra stretch, will count much less than the wide section of the stocking.

On the footer, the section nearest the sole will count finer than section in the middle of the foot. For the same reason, the section between the high spliced heel will count finer than the ankle portions.

So, with this experience, I have reached the conclusion that the pick-glass is correctly named, and should be used for counting picks in cloth rather than wet, stretchy, gum silk, knitted fabric.

This leaves us the only method that I have found at all satisfactory for sizing full-fashioned machines, and this method is running a given number of courses and measuring this number of courses with a steel rule on each and every head. For example, if we wish to knit 50 courses per inch, we run the machine 50 courses and measure. It is advisable to count and measure just after the hem when the full needle head is knitting and the full width of the fabric lessens the amount of stretch. We usually count from the first course after turning the welt



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the number of courses we desire for one-inch, and measure from the back of the needles to the edge of the hem, and if this measures one inch, then the desired number of courses per inch is correct.

After this point, if another test is wanted, black the silk on each head, turn the machine over until the black silk reaches the needles and then run the machine any given number of courses and measure again. For example, if you want 55 courses per inch, then run the machine 55 courses and measure to see if the average space is one inch. If the space on an average over all the heads is a little short, then loosen the slacker. Usually one nick on the slacker amounts to about one course per inch in the stocking. When the machine average is correct, then the discrepancies in the individual heads must be corrected on the individual heads. In most cases this can be controlled by the slur-cock. However, there should be maintained a limited amount of play between the sinker butts and the striking-jacks, and in some instances, in extreme cases, it may be necessary to adjust the sinker-head or the needle-bar.

In sizing the footer it is only necessary to get the correct number of courses per inch as in the legger, and then put the correct total number of courses in the counter to knit the desired size. The total number of courses needed to produce a given size is best arrived at by knitting sample sets with the approximate correct total number of courses, then finish the set and see what size board it approximately fits. If, for example, the set is ⅛-inch short for size 9 and you are knitting 48 courses per inch, then by adding 6 extra courses to the course counter you will get the correct size. When the correct size is arrived at, then cut a sizing stick the exact length of the inside edge of the sole between the heel tab and the toe on the footer and mark this stick, or rule, No. 9, and use this stick as a sizing stick for size 9. Then make other sizing sticks one-half inch shorter for size 8½ and ½-inch longer for each succeeding size above 9's.

When you want to change the size on a machine knitting 48 courses per inch, it is only necessary to change the course counter 24 courses for each half size change. This is assuming of course that all footers are set up for the same length toe on all sizes. It is necessary to make individual head adjustments on the footer to correct discrepancies the same way as outlined for the legger.

The total number of courses necessary to put in the leg to give a desired length depends largely on how much the stocking lets out in finishing, and the width of the board on which the stocking is boarded.

Your Ideas Invited.

"More waste and seconds can be traced to poor sizing than any one cause, and I believe any mill with as many as 25 machines can well afford to employ an efficient sizing man to do nothing else but look after this work. He need not be a high-salaried fixer. Any good knitter can be trained to do the work. He can walk up and down the machine alleys and notice the slack and taut stockings, and adjust these and pay well for his time."

Mr. Gaddy makes this statement, and describes the method which he has found successful. After reading his description, you are invited to comment upon the subject, for the "Knitting Kinks" department, by giving your views and experience on the subject.—The Editor.

◆ ◆

The amount of let-out in finishing depends much on the character of the silk, such as the amount of twist and the amount of boil-off. Also the method used in degumming and dyeing and the after-treatment of the goods in the finish bath. You have to knit to meet these conditions.

The total number of courses may be determined in the same manner as explained for the footer, by knitting sample sets with the counter set by estimate; then finish the sets and determine from this experience the changes to be made in the total number of courses to give the required length.

As I said in the beginning, it is never known just what gum fabric will finish, but as a rule, average silk, boarded on the average width board, will count approximately the same courses per inch at the widest point in the stocking as the fabric was knit. Stated differently, a stocking knit 50 courses per inch should finish 50 courses per inch just below the hem, but gradually count less with the taper of the board to the ankle. It is reasonable that a 25 per cent boil-off silk would count less courses per inch in the finished fabric than a 23 per cent boil-off, both being knit the same. So it is necessary for the knitter to know the character of his silk. He must have uniform silk, uniformly soaked and conditioned, if he is to get uniform results.

Factors Which Have an Influence or Effect on Proper Sizing.

The knitter who is getting his silk from several sources with variable conditioning, can never expect the best results. All knitters are familiar with the things that enter in, to affect the sizing, but I will mention a few of the outstanding:

Humidity, temperature, dirty wicks and dirty machines, hard or soft wind on the cones, careless threading, and many other minor causes too numerous to mention.

With all these handicaps too much attention cannot be given to sizing. More waste and seconds can be traced to poor sizing than any one cause, and I believe any mill with as many as 25 machines can well afford to employ an efficient sizing man to do nothing else but look after this work. He need not be a high salaried fixer. Any good knitter can be trained to do the work. He can walk up and down the machine alleys and notice the slack and taut stockings and adjust these and pay well for his time.

I believe the method that I have attempted to describe for sizing, if followed up in a sane and practical way, will produce satisfactory results and be of much help to those who are trying to solve the problem.

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Dyeing Silk Hosiery

By Noel D. White

IN THIS DISCUSSION, Mr. White gives a very thorough outline and description of the use of acetic acid in the dyeing of silk hosiery. He advocates the use of acetic acid as a means of making the silk part of a hose absorb as much of the direct colors as possible, which would reduce the necessary quantity of silk colors. He says that direct colors, if applied to silk in the proper manner, are much faster than silk colors. The columns of our "Knitting Kinks" department are available for further discussion of this subject.—THE EDITOR.

THE FIRST and most important operation in dyeing silk hosiery is the boil-off, or degumming of the silk in the goods. In this operation, the silk is stripped of the sericin, or gum covering, of the silk fiber and the whole fabric is cleaned of the oils, softeners and lubricants used by throwsters, spinners and knitters in the course of manufacture.

It has been a much debated question whether the de-gumming of silk hosiery is best done with soap or boil-off-oil, and the question is still open to debate. There are dyers that are sold on the oil method, and it will be hard to convince them that soap is a better de-gumming agent. We will not argue that point except that we will try to bring before you some evidences gained in our experience of many years that both mediums have merits according to local conditions, the kind of fibers in the hosiery, besides the silk itself, and the ability of the dyer to choose what is best for his work.

Boiling-Off.

In a dye-house that is equipped with a filtering and water softening system, soap may be used with good results provided enough soap is used and the washing of the boiled-off goods is done thoroughly. I said "enough soap is used" because only recently I read in a reputable textile paper an article on boiling-off fine silk hosiery, and it was stated to use "10 per cent of soap reckoned on the amount of goods to be processed." Now that statement was wrong. Anyone trying to boil off silk with ten per cent of coap is sure to get in trouble. To degum silk properly it takes no less than double that amount reckoned on the amount of silk in the goods.

For example: for service weight hosiery where the tops, toes and heels are knitted with cotton the hosiery may be 40 per cent, or even 50 per cent cotton, in which case 10 to 12 pounds of soap would be sufficient to de-gum 100 pounds of hosiery. On the other hand, if the cotton is only used on the re-enforcement of the hosiery, in the seam, or in some plaited parts, it may be only 10 per cent or 15 per cent in 100 pounds of goods, and 10 per cent of soap will positively not be enough to do a good job of de-gumming. I have had dyers tell me that it took them three hours to boil-off a lot, and "How could I do it in 45 minutes?" But, it can be done in less time on fine hosiery with good circulation: it is only a question of using enough soap of the proper kind.

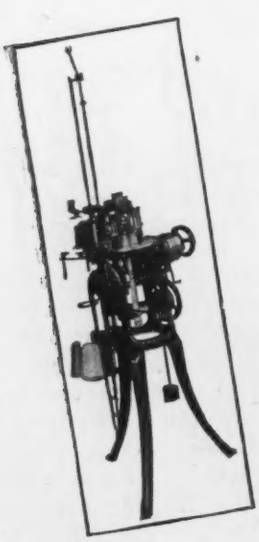
When the dyer has no soft water available, and has to do his work with calcareous water, soap may not be the best thing to degum with. The lime and magnesium in the water will break up the soap before de-gumming is completed, and more than the stated amount of soap would have to be used to take care of the soap that is lost in the hard water. Here is where a good boil-off oil would be by far the best medium together with some modified alkali as an aid to correct in some way the hardness in the water and hasten the process. If the hosiery also contains rayon, then the best way is to boil-off in a good grade of boil-off oil and to use enough of it to get it done in the shortest possible time. The softeners used in making and knitting rayon are almost impossible to remove with soap, and even though a good boil-off may be obtained with it, it is extremely difficult to wash the goods free of "nigger heads" (the name some dyers of hosiery have given to these greasy pellets often found in the finished hosiery).

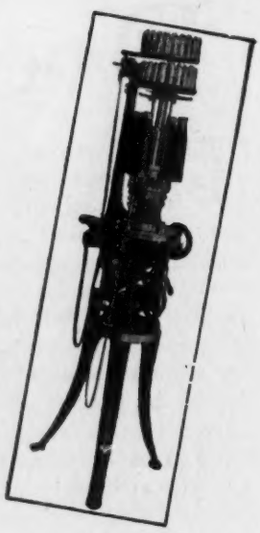
Washing the boiled-off goods comes next, and must be done thoroughly. If a good soap, or boil-off oil has been used this operation will not be very difficult. The first washing may be done at a high temperature. The goods at this time contain a good deal of the boiling off medium, and will wash out a lot easier in a hot water bath at 160 degrees F., or even higher, for at least fifteen minutes, then in a second rinse at 120 degrees F. In this second water, a small amount of a mild alkali would be beneficial in preventing what soap still remains in the goods from breaking up and impregnating the hosiery with grease. About 15 minutes in this water, and then in a final rinse. There is still a chance in this last water to provide a lot of trouble if it is not done carefully. The temperature here must be watched; about 100 degrees F. is sufficient to remove the remnants of soap and leave the goods sufficiently clean and ready to be dyed. With water that has not been softened it sometimes happens that some grease is seen floating in this water. Flooding this grease over the top of the machine, as it is sometimes advised, is absurd, but if grease is seen floating in the wash water it is most certainly also floating in the bags with the hosiery, with no possible chance of escape, and that will surely appear when the hosiery is stretched out on the inspection tables. The thing to do when the dyer is watching and sees a thing like that happen, is to emulsify the grease by adding some alkali to the rinsing water and keep on washing a little longer until every pellet has disappeared,

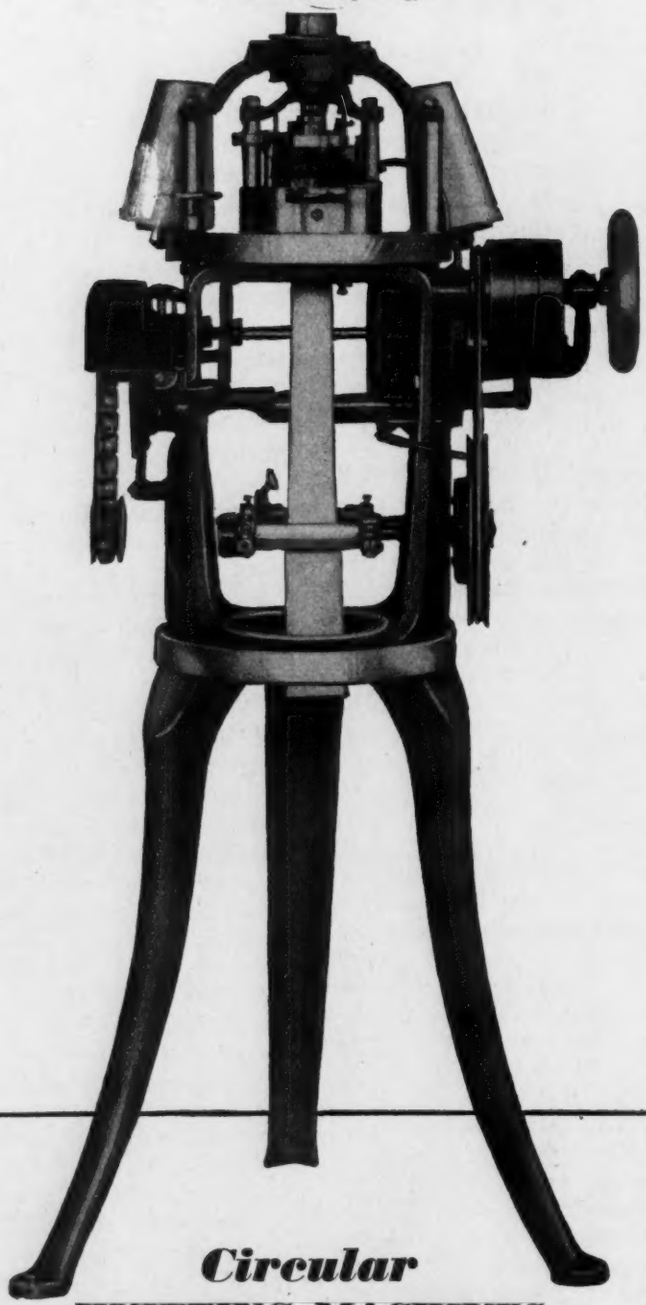
From a paper presented at a meeting of the South Central Section of the American Society of Textile Chemists and Colorists, at Chattanooga, Tenn., on November 8th.

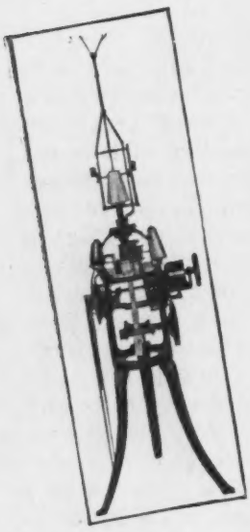
ALL TRUE-RIB

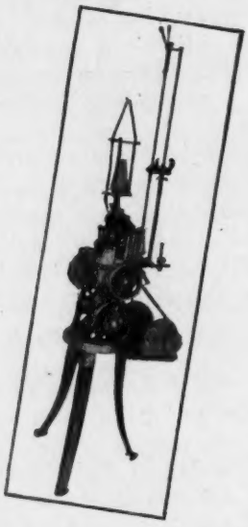
(Patented or patent pending)

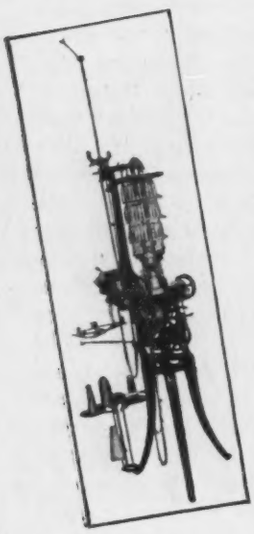


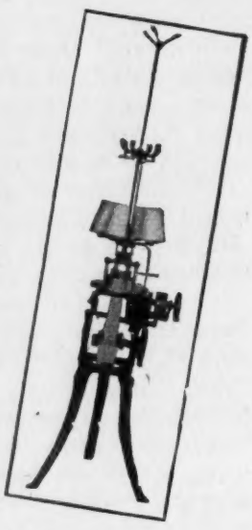












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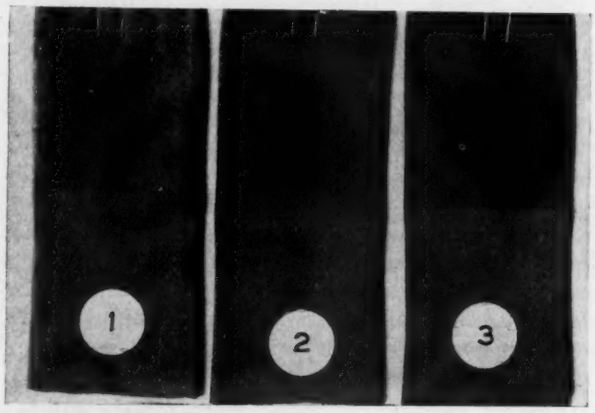
and then give the goods a final rinse with lukewarm water. The extra time it takes will be amply repaid in cleaner goods and reduced re-dyes.

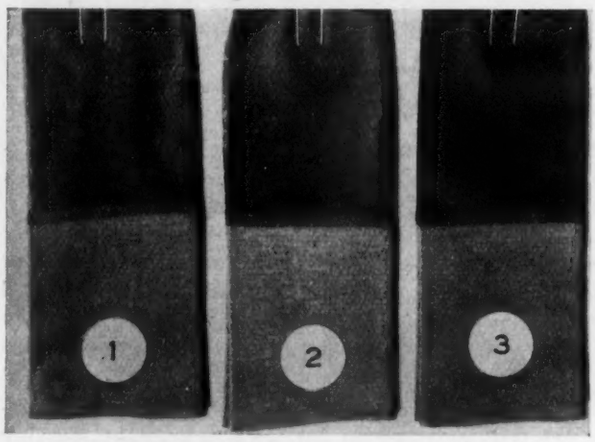
Dyeing.

Hosiery may be dyed in the same bath at the same time it is boiled-off. There are many dyers doing it undoubtedly with satisfactory results. I do not advocate that method in dyeing silk or silk-and-cotton hosiery. With silk-cotton-and-rayon hosiery,



Three samples dyed with a Silk Grey, (1), one-bath method; (2), two-bath method with Glauber salt; (3) two-bath method with Glauber salt and two per cent acetic acid.

however, I believe it is better to boil off and dye in one bath. The proportion of silk in this kind of hosiery not being large, the boil-off bath does not require a large amount of soap or oil. Eight or ten per cent is about the right quantity; the dyestuff is added, the goods boiled about 30 minutes, and the required amount of Glauber salt entered. When the



Three samples dyed with a Silk Brown, (1), one-bath method; (2), two-bath method with Glauber salt; (3) two-bath method with Glauber salt and two per cent acetic acid.

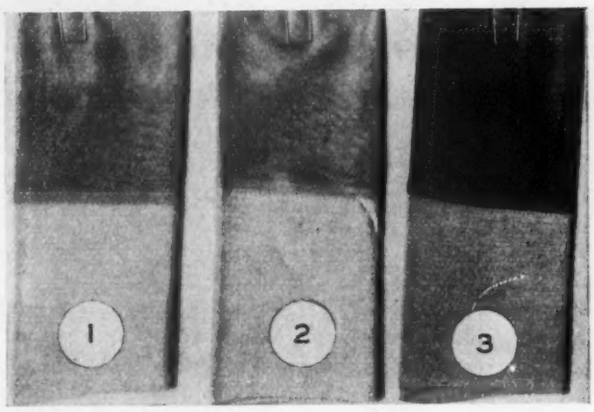
correct match on the three fibers is obtained, the goods are washed and finished. With a proper selection of dyestuffs, the whole operation of boiling off and dyeing should be performed in about one hour.

Pure silk hosiery, and hosiery made up with silk and cotton, should be boiled off and washed, then dyed in a separate bath. After the goods have been boiled off and washed properly, they are hydro-extracted and straightened out. That is, they are taken one bag at a time, opened up and disentangled carefully, put back in the bag in which they are to be dyed, and put in the machine. Each bag should contain no more than three dozen pairs of service weight, and four dozen pairs of very fine hosiery. Too many in a bag may be as bad as too few for good level dyeing.

Selecting the Dyestuffs.

Bearing in mind that hosiery has to stand many washings, and sometimes the washing is done with soaps that are far from ideal for washing silk, it is important that dyes used for hosiery dyeing be selected with care for fastness to washing.

Rayon and cotton are dyed with direct colors; this class of dyes being the most appropriate for hosiery dyeing. Most direct dyes are also suitable for silk, and with a judicious selection a few can be chosen that will dye almost a perfect union to match the three fibers. Usually, however, the silk has to be toned to obtain a good match, with some neutral or acid color.



Three samples dyed with a Silk Red, (1), one-bath method; (2), two-bath method with Glauber salt; (3) two-bath method with Glauber salt and two per cent acetic acid.

With a few well-chosen direct colors, and with no more than half a dozen silk dyes, all the range of current shades may be dyed, toned, and corrected, if need be. The fewer in number of dyes, the better and easier the work will be. Choosing those colors that have the nearest degree of exhaustion; some direct colors will be absorbed very rapidly, others will take longer time. The slowest to exhaust are the best to use in dyeing hosiery, they have a better chance to penetrate the hard places and dye level shades than their more ambitious brothers.

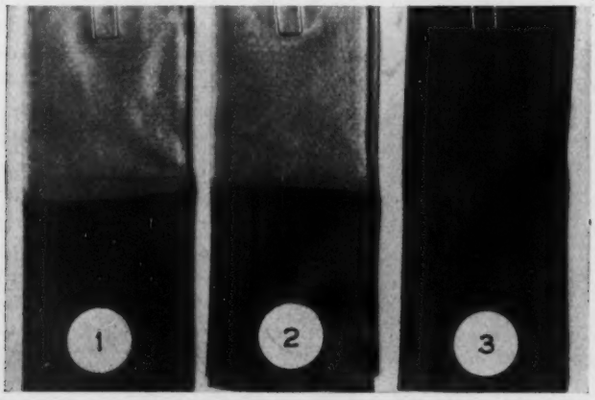
Some direct dyes are advertised to leave the silk white, or nearly so, but it has been our experience that these very dyes are much better and dye the silk nearly as good as the cotton, if applied in the proper way.

Applying the Dyestuff.

As I said before, the hosiery may be dyed in the same bath at the same time it is de-gummed. With hosiery made up with silk-rayon-and-cotton we have found that to be the best procedure, the silk in that mixture being the smallest percentage, no great

amount of dye is required for the silk and the work is done quicker.

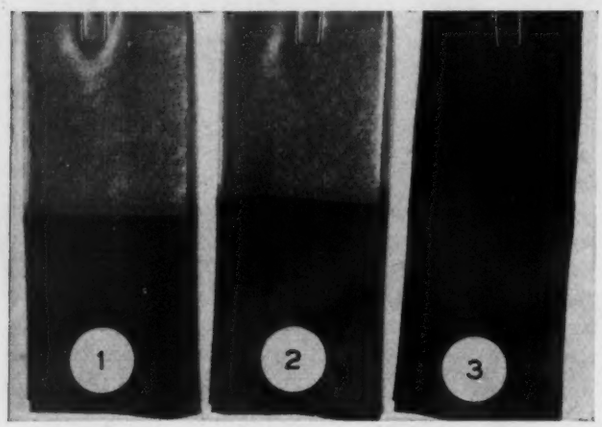
With silk and cotton, however, we have found that there is nothing to be gained by dyeing in the de-gumming bath. The goods are not improved by it, the colors are not as fast, and the formulas being more erratic, difficult to control, no great amount of time is gained and if the amount of dyestuff necessary to obtain a match is taken into consideration, de-gumming and dyeing in one bath is not without its faults nor as



Three samples dyed with a Direct Grey, (1), one-bath method; (2), two-bath method with Glauber salt; (3), two-bath method with Glauber salt and two per cent acetic acid.

economical as it is claimed to be.

A number of hosiery dyers use the two-bath method. They de-gum the hosiery, then dye in a clean Glauber salt bath, and get results that way. It has always been my contention that method, also, is not as it should be. A Glauber salt bath is excellent for dyeing rayon and cotton hosiery, both those fibers exhaust the dyestuff better and easier in a bath slightly alkaline. The affinity of dyestuffs for



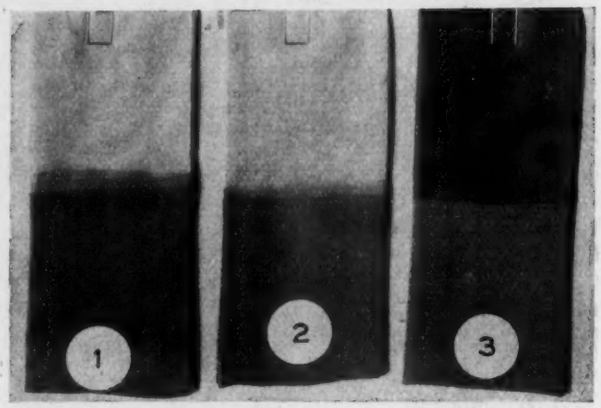
Three samples dyed with a Direct Brown, (1), one-bath method; (2), two-bath method with Glauber salt; (3), two-bath method with Glauber salt and two per cent acetic acid.

those fibers is at its best in such a bath, but an alkaline bath reduces the affinity of silk for direct, neutral, and acid dyes and while it may be colored with them it will take much more dye to arrive at a given shade, and then it is easily washed out of it. It will be found that in hosiery dyed in the de-gumming bath, as well as in a second bath of Glauber salt, the colors are faster on the cotton than on the silk. There may be some exceptions, some dyes that are fairly fast on silk even if applied in an irregular way; the fact remains that direct colors, which are essentially cotton colors, if applied to silk in the proper manner, are much faster than on cotton. Then why not utilize the knowledge of that well known property, and make the silk part of the hosiery absorb as much cotton dye as it is possible to do? When you do that it is easily seen that you will not need much silk dye to match your fibers to your sample shades, and much faster dyes will be the result.

Dyeing Hosiery in an Acid Bath.

While we have dyed silk and silk hosiery in every known way, we have adopted the two-bath method, but went a little further and do the dyeing in the second bath with the addition of acetic acid.

When it became known among my friends that we were using acetic acid in dyeing hosiery, someone said it was a dangerous proceeding, others said we went a little too far in economizing on dyestuffs,



Three samples dyed with a Direct Yellow, (1), one-bath method; (2), two-bath method with Glauber salt; (3), two-bath method with Glauber salt and two per cent acetic acid.

still others wondered how we got by with the hazards of doing work in such an unorthodox way. As a matter of fact, we do not try merely to get by in dyeing hosiery in an acid bath. We do not take any chances; silk hosiery is much too valuable material to be treated in an uncertain, haphazard way, and it is our firm conviction that in dyeing hosiery the way we do it we have the bath under complete control, at all times, during the processing.

We load our goods in the machine, fill the machine with water, open the steam, and start putting our chemicals and dyestuffs in the following order: Turkey red oil, some kind of a penetrant, dyestuffs required, carefully weighed out and dissolved, bring the bath to a boil, and boil for 20 minutes. After this the steam is closed, Glauber salt added, and the goods allowed to run in the cooling bath for 20 minutes longer. At this time we add two per cent of acetic acid, bring the bath to a boil again, and sample in 15 minutes. Sometimes we have to boil a second time to obtain a better union to silk and cotton, yery seldom we have to make any addition to dyestuff and our matches have to be correct as we con-

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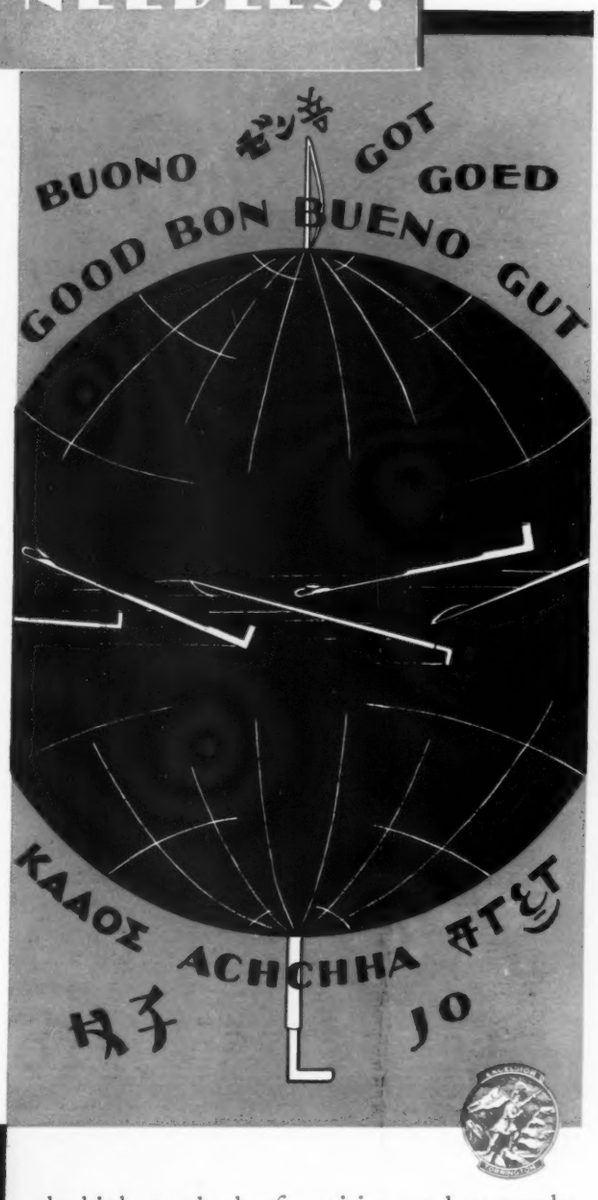

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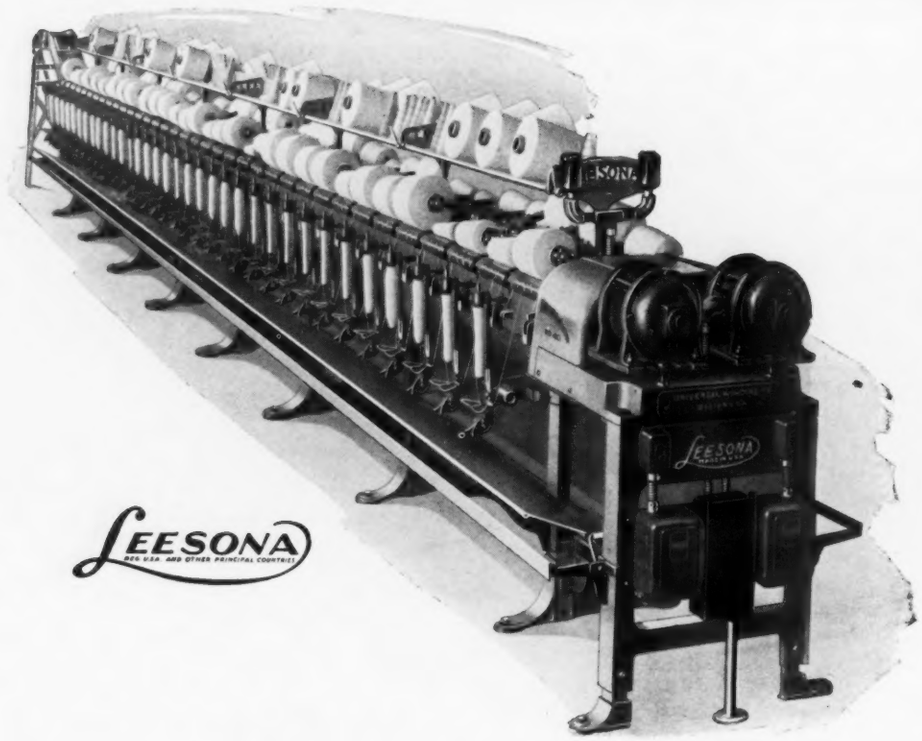

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UNIVERSAL WINDERS

sider the reputation of our brand of hosiery had its birth in the dyehouse, and we are very proud of it. After having exposed our methods of dyeing hosiery on several occasions in textile publications, I have heard many criticisms from some readers who tried to use acid in the bath and reported bad results from it. For my answer to those criticisms, I will tell you as far as I can remember, an old fable many of you may have read or heard:

"The Magpie Builds Her Nest."

The magpie called a meeting for all the birds to be instructed how to build a nest. When they were all gathered, she told them: "You gather some twigs and weave them together in the shape of a bowl." The crow having heard that far, concluded that it was a good way to build a nest, and flew away satisfied that that was the way he would build one.

The magpie, however, had not finished instructions. She went on telling them to gather some dry grass and cover the twigs with it to make it warm. The swallow having heard that, flew away also thinking he had heard all he wanted to know, and started building his nest that way. Some wise birds listened to the end of what the magpie was telling them, and learned that if they wove their nest with twigs, put some dry grass in the weaving, and lined it with feathers, they would have a nest that was secure, warm and soft.

And, so it is with most of my critics who have tried our method, and got into trouble. They have some conceptions of their own how the work should be done, fail to understand what takes place in the progress of the dyeing operation, enter the several chemicals at the wrong time, and when the mischief is done they make up their mind our method is all wet. They don't follow instructions to the end. Like the crow and the swallow, they are satisfied with a hint or two, and follow their own inclinations.

A Simple Outline of the Process.

Here is what takes place in the process of dyeing by the method outlined, told in a language devoid of academic phrases and scientific terms:

When the goods are boiling in the neutral dyeing bath with only the dyestuffs, the Turkey red oil and the penetrant, the dye is circulated through and through, no actual dyeing takes place except insofar as to be soaked up by the fibers in a loose manner. If it should be desired to continue and finish dyeing in that bath, it could be done but it would require considerably more dyestuff. That is why with some dyestuffs it is suggested to dye light shades without any addition of salt. When, after boiling 20 minutes, Glauber salt is added and the steam shut off, the direct dyes are taken up and retained mostly by the vegetable fibres leaving the silk only slightly colored, unless neutrals or acid dyes are also in the bath. In the cooling bath the cotton gets most of the dye, and after 20 minutes the bath is nearly exhausted and cooled down to about 150 degrees F., at which temperature 2 per cent of acetic acid diluted in about two gallons of water can be safely entered to make the silk absorb the rest of the dyestuffs remaining in the bath.

At this time the bath is acid in reaction, and favorable to dye the silk with what remains of the direct colors in the bath. If from laboratory tests it was found that the direct colors were not sufficient to color the silk to a perfect match, a small amount of silk dyes should have been added to the formula and entered at the start and after taking a sample, any deficiency in the pattern can be easily and safely corrected now by adding whatever silk color is needed. Boiling the bath again will reduce the color from the cotton and deepen the shade on the silk.

On the other hand, if it be found that the silk has been dyed too deep, an addition of one per cent of phosphate of soda will reduce the acidity of the bath, lighten the shade on the silk, and increase the depth of color on the cotton. In the same manner, if the color on the silk should for some reason be found to be unevenly dyed, boiling the bath with one per cent addition of phosphate will level up the shade very effectively, restoring the shade afterward with a small addition of acetic acid.

Getting Value Out of Dyestuffs.

To illustrate to you some of the remarks I made I have here some test dyeings of three direct dyes and three silk dyes that are mostly used in dyeing hosiery; a yellow, a brown, and a gray, supposed to dye cotton and leave the silk white or slightly tinted. (Shown on page 188).

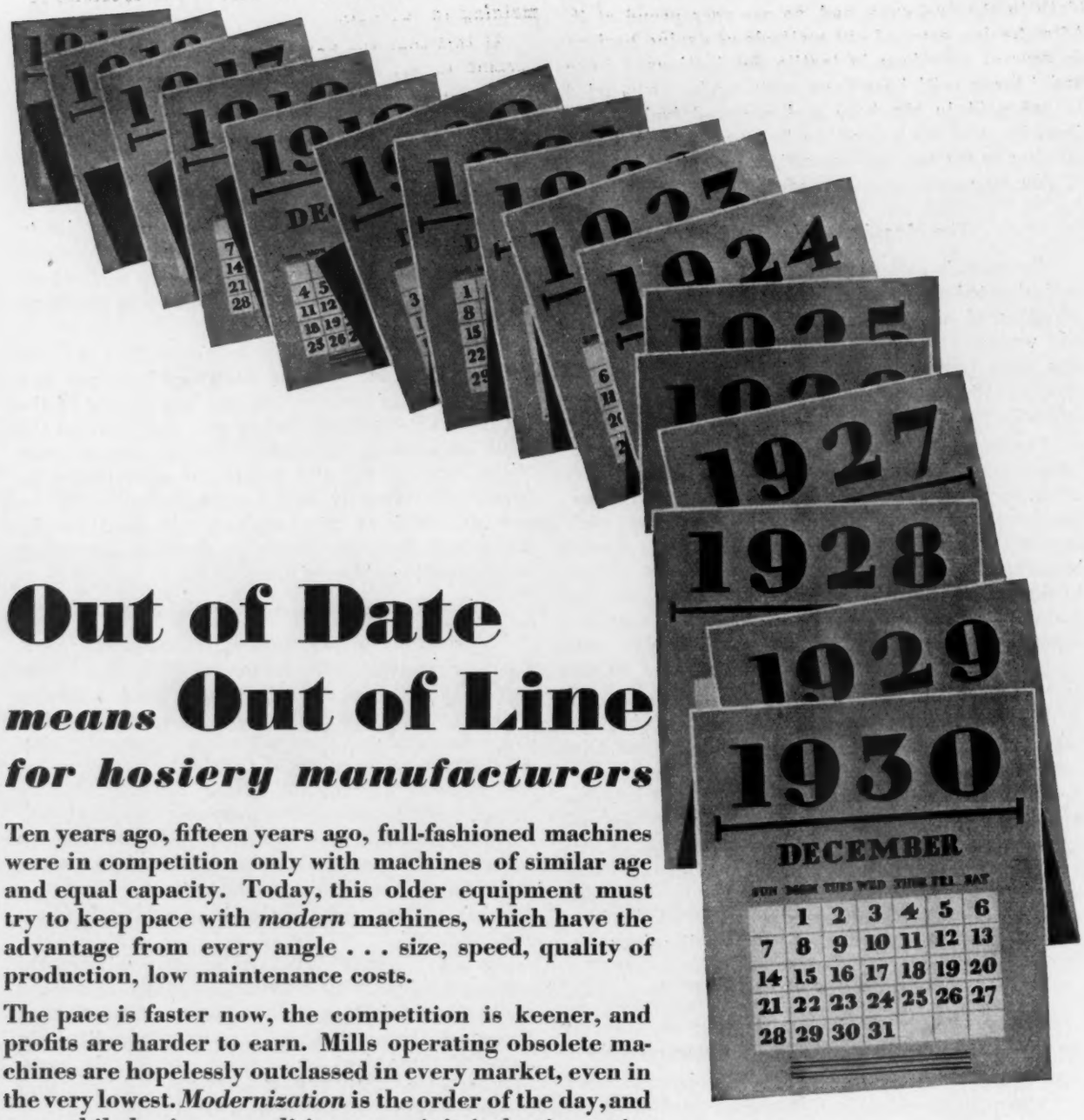
One is dyed in the boil-off bath, and you can see it has left the silk quite undyed. The next was boiled off, washed, and dyed in a clean Glauber salt bath, and true to form has left the silk clean. The third has been boiled off, washed, and dyed in a Glauber salt bath with the addition of two per cent of acetic acid.

Here you can see the gain in color value of the same dye when it is made to yield the full amount of its tinctorial strength. The other two have been processed the same way. I purposely omitted the name of these dyes because you can do the same, or nearly so, with any direct colors, as you may prove for yourself in your own laboratory.

The other dyed samples are of silk colors. (Shown on page 187.) They have been applied in the same manner as the direct dyes. These are used to shade the silk when the direct colors do not dye the silk sufficiently to get a good match, and you can see the difference in depth when applied in the right and the wrong way.

Faster Colors with Acid.

Now I want to call attention to the fact that if the hosiery is dyed with these colors, and made to yield such a depth of shade on the silk, it is quite obvious that very little silk dyes would be needed to bring the match to pattern, and considering that the cotton colors are much faster on the silk than on the cotton, you will agree with me that your hosiery will be dyed much faster colors with acid in the bath than otherwise.



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The pace is faster now, the competition is keener, and profits are harder to earn. Mills operating obsolete machines are hopelessly outclassed in every market, even in the very lowest. *Modernization* is the order of the day, and now, while business conditions permit it, is the time to install machinery which shows immediate and lasting profit.

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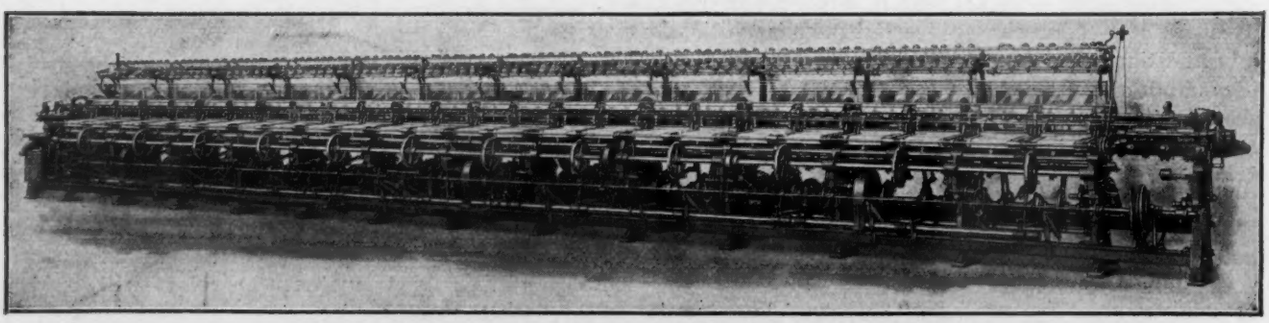

The Reading Full-Fashioned Knitting Machine as it stands today—after 32 years of development—is the lowest priced, highest producer ever offered.

A Question for Dyers.

What is the best way of cleaning Monel metal machines after dyeing a black? Your answers are invited.

EDITOR COTTON:

Would like very much to know how some of your readers clean their Monel metal dye machines after they have dyed developed black in them. I have been unable to find a satisfactory way of cleaning this type of machine so that a light color may be dyed immediately after dyeing the black. Also, do any of your readers find that black injures the metal in any way?

I would be glad to have complete information as to methods used. CONTRIBUTOR NO. 4892.

A Discussion of Grenadine—for Full-Fashioned and Seamless.

This will prove of value to you because it covers thoroughly a subject of much interest at this time. Further discussion is invited.

EDITOR COTTON:

This is written in response to the inquiry from "CONTRIBUTOR NO. 4869," who wanted to know the difference in Grenadine silk thrown for a full-fashioned machine and that thrown for a seamless machine. He also wanted to know how the silk is treated before knitting, for both the full-fashioned and seamless machines. I will try to answer this inquiry from our own experience.

There is a difference between the Grenadine silk used for seamless manufacture and that used for full-fashioned manufacture. The difference lies, not in the twist, but in the treatment of the silk by the throwster.

Full-fashioned manufacturing will permit of moistening of silk prior to knitting. Seamless manufacturing will not. The yarn in both cases must be soft enough to form a perfect stitch. In full-fashioned manufacture the silk is moistened prior to knitting. The moistening helps very materially to soften it. Therefore, throwsters so treat the yarn that the soaking materials soften only through the medium of lubrication, using a lubricant that will pick up moisture.

In seamless manufacture, this same yarn would be too harsh to form a perfect loop, and throwsters are therefore compelled to use a softening agent which softens the yarn through weakening of the sericin or gum coating of the silk fibers. This softening does not harm the fabric, as not enough of the softening agent is employed to deteriorate the fiber, which is all that remains of a silk thread after the stocking is dyed.

We understand that it has been a practice for some throwsters and knitters to use a lower twist in seamless manufacture than full-fashioned, but this lower twist will, of course, have an effect in the finished product both as to appearance and as to wear.

The success of Grenadine fabrics, we have found, depends on the twisting both insofar as the number of turns in the single end, and in the multiple threads is concerned, in respect to the number of turns per inch and the perfect balancing of the two twists. If the turns are reduced, Grenadine materially loses much of its appeal.

A Grenadine yarn is a counter twisted yarn, so constructed that there is no crepe effect, the idea being to produce not a rough fabric but a sheer fabric of strength and dull luster. The twist is responsible for all three of these demands, but in lesser amount insofar as the sheerness is concerned. A four-thread Grenadine, for example, constructed of let us say 20 turns first time and 16 turns the second time would probably be to all practical purposes of the same diameter as a four-thread constructed with 36 turns in the first time and 32 turns in the second time, possibly even a little more sheer. But it would be less strong, and much less dull.

Some attempts have been made to use the low twists of Grenadine type and reduce the luster by chemical treatment in the dye bath. This is a practice that has shown, according to our experience, poor results, for the reason that chemicals or dulling agents which are not injurious are not permanent in the fabric, and those which are permanent have detrimental effects.

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

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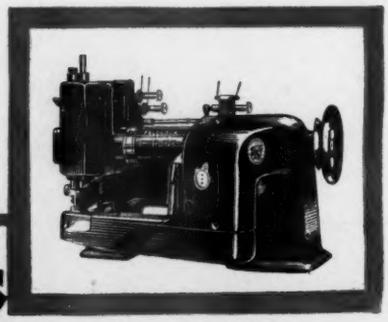

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Another difference not in the construction of the Grenadine that has been prevalent in the trade is the substitution of lower grade in seamless manufacture in order to produce a stocking to sell at a lower price. This practice cannot prevail, as the lower grades of silk have so many defects, such as variance in size and lumps, slugs, etc., that the stockings cannot be classed as first grade merchandise, and consequently suffer a reduction in price far beyond the saving to be effected by such lower grade substitution.

CONTRIBUTOR NO. 4878.

Direct Knitting versus Backwinding.

Some further discussion on this interesting subject. One man finds it worthwhile to knit without backwinding.

EDITOR COTTON:

I was very much interested in reading the question in the May number of COTTON, from "CONTRIBUTOR No. 4724," as to the relative merit of backwinding silk for full-fashioned work, and using silk direct from the cone, following a process of conditioning it in a conditioning room or vault. The inquirer stated that in his full-fashioned room, he has no humidifiers, but stores his silk in an adjoining room, where he has located a number of humidifiers which blow the spray over the silk. He stated that he is at present back-winding all of his silk, consisting of 4, 5, 6 and 7-thread, using a bleach glycerin softener, the mixture being one quart of softener to 10 gallons of water. He had been contemplating the installation of a conditioning room, eliminating the backwinding process, pointing out that the elimination of backwinding would result in a saving of about 3½ to 4 cents a dozen. He wanted the opinions of some readers as to the advisability of abandoning backwinding where the silk is conditioned in a modern, properly installed conditioning room.

I would like to present my own views and experience in connection with this subject which is of so much interest among full-fashioned mills at the present time.

The basic facts which determine whether or not it is necessary to backwind silk through an emulsion, or whether it can be knitted from a dry package, depend upon several factors. One of these is the quality of the finished fabric that the manufacturer may be interested in securing. Second, it should be borne in mind that a dry package, so called is not always the same as viewed by various manufacturers. One manufacturer may state that he is operating a dry package, or running his silk without backwinding, when in fact he may be treating his silk to a temperature relatively high and a humidity that might even be equal to that obtained by many methods of backwinding. This depends upon whether the knitting room is conditioned by humidifiers or other systems, subject to proper control, or just what type of arrangement the silk receives after it leaves the cone before it arrives at the needles. By this is meant the type of trough, the nature of the liquid through which the silk is run before it comes in contact with the needles, etc.

From the financial standpoint, there is naturally an additional cost of approximately four cents per dozen added by backwinding. Whether this expenditure is warranted, depends, as before stated, entirely upon the individual manufacturer as to what results he is satisfied with in the finished fabric.

Furthermore, in backwinding, I have always found it best to use a backwinding compound that corresponds very nearly in chemical composition to the soaking solution originally used upon the silk. The amount of backwinding solution per gallon, naturally depends upon the speed of the emulsion roller, the hardness of the silk being backwound, and the degree of softness that the mill man desires when the fabric is being knit. There is no cut-and-dried answer to a question of this type. It is a matter of opinion to which is added the finished fabric result desired.

In connection with this discussion, however, I should like to present here the method we use on our silk.

We condition our silk prior to backwinding, also backwinding the silk, and again conditioning it before knitting. This applies to all threads of silk from 3 thread to 8 thread.

The first conditioning runs from 18 to 24 hours. The silk is then backwound, and again conditioned from 18 to 24 hours before it is used. We have found this to be the best method of regulating our hosiery from the raw silk standpoint.

Our backwinding room consists of a wooden room approximately 8 x 10 x 8 feet, with shelves arranged of ½-inch slats spaced ½-inch. The entire room is sprayed with three coats of orange shellac. At one end, opposite the door, which is placed on the 8 x 8-foot side, there is a humidifier head with a 6-inch adjustable opening, directly in back of the intake theer is a similar hole in the center above the floor of like diameter, also with an adjustable opening.

We maintain a temperature of approximately 90 degrees and a humidity of approximately 80 to 85 per cent. The construction of the room proper is of 1-inch tongue and grooved board for the interior, a 3-inch air space, one layer of tarred felt similar to roofing material, a 3-inch air space again, and an exterior construction of beaver board. We have found this room to be very economical to build and practical, the right type of room, especially when fitted with a refrigerator type door as ours has been fitted.

Naturally, the period of pre-conditioning before winding depends upon the thread of the silk in question, whether 6 or 7-thread, etc., and the turns of twist in the yarn. On a 10-turn 4-thread, we find it necessary to condition at least 30 hours in this room to get a free, running silk.

The second conditioning after backwinding is naturally governed by the pre-conditioning, the nature of the backwinding solution, and the tension used. All of these little details have to be worked out at the individual plant. A great deal depends upon the yarn equipment of the machine, on which the silk is

being knit, for different yarn arrangements, as extra guides, under water, different compounds in the troughs, different tensions on the felts—all of these have to be worked in harmony with the results desired on the fabric, as well as the actual room conditions where the fabric is being knit.

The writer's personal opinion of a well acting silk is such that when a machine is running at approximately 50 to 55 courses per inch, the material should feel comparatively wet ½-inch from the needles, the fabric should already show signs of drying and setting. Only in this way will an undistorted, full width fabric be produced.

In conditioning by this method, the actual nature of each individual lot of silk has to be examined and determined. The conditioning and backwinding, in particular the percentage of emulsion and make-up of the emulsion, must be balanced in such a manner as to produce a free-running yarn. Tensions on the regular winding machine or coner used for backwinding must naturally be regulated so that a substantially handled package is produced and at the same time the other qualities brought out that are so essential to knitting the best fabric. As before stated, a little experimentation and research on this particular point most every time will bring best advantages to the average mill man.

CONTRIBUTOR NO. 4795.

Stopping Streaks and Tucks.

Do you agree with the ideas given in the following answers. If not, tell us your experience on this.

EDITOR COTTON:

How is streaking and tucking in the loose part of the stocking prevented, was asked in your columns recently by "CONTRIBUTOR NO. 4832". He stated that he has 220-needle Model K machines, using 70s/2 mercerized yarn, and aside from having difficulty with tucking in the loose part of the stocking, he finds that streaking is very pronounced.

I would say in reply to this that if this tucking is on the long latch needles used for the fashion marks, there is a sinker that is cut out a little deeper to prevent the long latches from bending and at the same time tucking. Most tucking caused in the loose part of a ladies' hose is due to the fact that the sinkers are being drawn away from the needles as they are rising on the right-hand stitch cam. The needles have not completed their full rise above the tuck point when the sinkers are withdrawn, leaving the stitches rise with the needles; consequently, the stitches are above the latch and not below, which causes tucking.

This can be corrected by changing the position of the sinker cap or if sufficient adjustment cannot be obtained by moving the sinker cap, the throwing out of the sinkers can be delayed by grinding a little from the center sinker cam on the right-hand side.

As to his trouble of streaking, I do not know whether he means vertical stripes or horizontal stripes. If the streaks are horizontal, I would say that this can be caused by the stitch and end cams on the left-hand side not being set up into position, and, of course, if the belt is slightly loose, the looser needles will drive, causing loose lines, and the tighter needles will cling to the bottom of the stitch cam, which will give shorter stitches. If the sinkers have not been changed in the machine for a long time, no doubt small nicks may be found in the sinkers where the yarn has been passing over the sinkers. The sinker cap should be so set that the sinkers are still moving as the yarn is being drawn down by the knitting cam. This will allow the sinkers to last much longer and also make a clearer fabric.

In case this streaking is vertical, it is no doubt caused by different lengths of needles, the shorter needles of course making the longer stitch and the longer needles making a tighter stitch. This can also be caused by the brass inside sinker ring being considerably worn.

CONTRIBUTOR NO. 4863.

EDITOR COTTON:

In one of your recent numbers "CONTRIBUTOR NO. 4832" asked a question as to how to prevent streaking and tucking, in the loose part of the stocking, on 220-needle Model K machines, on which he said he was using 70s/2 mercerized yarn. He said that aside from having trouble with tucking in the loose part of the stocking, he finds that streaking is very pronounced.

If this man had submitted a sample of the fabric he is trying to produce, it would have been of assistance in analyzing his trouble. However, I will go into detail on this trouble, stating my experience over a period of many years on this gauge and type of work.

To begin with, whether the inquirer is aware of the fact or not, 70s/2 mercerized yarn is too fine a yarn to use on a 220-needle machine. I take it for granted, from the question, that 70s/2 mercerized is being used in both the hem and boot. Most any kind of yarn *under* 70s/2 mercerized works out very satisfactorily on this gauge, provided of course that there are no extremes in knitting, such as attempting to knit too loose a stitch to get length, rather than adding chain links and keeping the stitch a little tighter.

Taking it for granted that these machines are standard as to stitch cam, sinker cam adjustments,

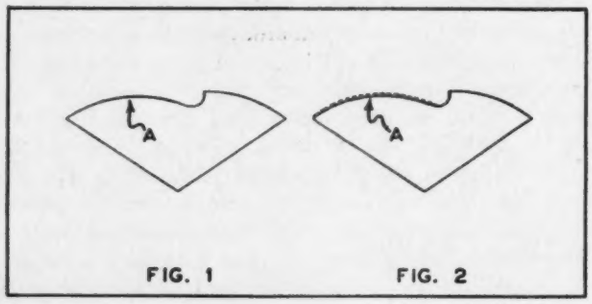

FIG. 1 FIG. 2

etc., and that the needles are in good condition and *perfect* alignments and that the inside sinker ring is not plugged with lint and the sinkers are in good shape, all of which are explained in detail in "Knitting Kinks Hand Book No. 1," distributed by COTTON, I will offer the following comments on the subject:

Streaked knitting is mostly a question of proper adjustment of the cams, and alignment of needles and

sinkers. Whenever extremities in stitch, especially on 220-needle work, are attempted, these streaks are naturally more prominent.

Tuck stitch trouble *can* be prevented. This trouble is the result of the stitches not casting off of the ends of the latches of the cylinder needles as they pass over the high points of the right-hand stitch cam. This point is shown in the accompanying sketch, Fig. 1, at *A*.

It can be seen that the *higher* the cylinder is, the closer the latches of the cylinder needles are to the top of the sinkers as the needles pass this high point on the stitch cam. The *lower* the cylinder, the further away the latches are with the result, as the needle rises, the loops are cast off. Going at a high speed, with the cylinder high, every once in awhile a loop will not cast off, resulting in a double tuck.

The remedy naturally is to get a higher point on this right-hand stitch cam at the point *A* as shown. About 1/32-inch is plenty. The extra height will permit the latches to clear the stitches and still get loose fabric. This higher stitch cam is shown in Fig. 2.

These cams can be secured from the machine manufacturers, if the gauge and what they are desired for is specified.

In inserting these cams in the machine, it will be found that they must be fitted. The right point of the upper center cam must be taken into consideration. Cut and grind this added height of the right stitch cam at *A*, so that there is clearance for the butts of the cylinder needles to go through without hitting the right point of the center cam, especially when going at high speed.

After all, it is just a question of getting a little more elevation of the latches of the cylinder needles at this point, and this is how it is done.

CONTRIBUTOR NO. 4865.

Stopping Cutting in the Anti-Run.

A number of different ideas on how to get away from this difficulty. What do you think is best?

EDITOR COTTON:

"CONTRIBUTOR NO. 4831" to the "KNITTING KINKS" department said that they are having a great deal of trouble with cutting in the anti-run portion of hose knit on 220-needle Model K machines.

This is usually caused by the right-hand stitch cam drawing the needles down too far during the anti-run operation. We have usually corrected this by making the knitting point of the right and left-hand stitch cams of an equal length, and in extreme cases have shaped the right-hand stitch cam so that it does not draw the needle quite as far as the left-hand one. This difference in the length of the stitch cams of course should not be so great that the stitches in the heel and toe will be of uneven length.

Another cause for these cuts is too much sinker pressure. The right-hand sinker side cam should be adjusted away from the needles until the throat of the sinker is just beyond the back of the shank of the needle when moved into the farthest position.

Another thing that may aggravate this condition on these machines is the fact that a 70s/2 yarn is used, which is a little to the light side as a standard yarn for this gauge.

The writer takes the liberty here to express his opinion that anti-runs are quite unnecessary, as they contribute little in the way of stopping runs, and though made without causing waste in the knitting room, they make a weak place in the stocking. We have found very successful a special attachment for the purpose of loosening the stitch during this operation. The anti-run made without the looser stitch has been of no asset to circular-knit manufacturers, as the stocking often breaks at this place when worn.

CONTRIBUTOR NO. 4868.

EDITOR COTTON:

One of your subscribers, "CONTRIBUTOR NO. 4831," recently reported difficulty with cutting in the anti-run portion of the hose on 220-needle machines, using 70s/2 mercerized yarn.

Taking it for granted that this anti-run is being made in the customary way, using every other needle, the trouble resolves itself into the yarn used, the tension applied to the yarn, the sinker cam adjustments, or the drum tension control. The main cause is the stitch being too tight while making this anti-run. This can be determined by stretching the fabric at this point. If the first one or two courses above and below the anti-run are looser than the anti-run itself, this trouble results. The stitch should be the same in the anti-run as it is above and below for at least two courses. It is customary on these machines to have an individual control on the drum for adjustment of the stitch while making this anti-run. It is then possible to loosen it as much as desired. It should be made certain that too much tension is not being applied on this 70s/2 yarn, as it will not stand much pull on 220-needle. Also, are the sinkers and stitch cams set properly? These and many other factors relating to this trouble are discussed in "Knitting Kinks Hand Book No. 1" and which is distributed by COTTON.

CONTRIBUTOR NO. 4866.

EDITOR COTTON:

One of your subscribers recently reported to "KNITTING KINKS" that he was having difficulty with cutting in the anti-run portion of the hose, using 70s/2 mercerized yarn on 220-needle Model K machines.

I might offer the following suggestions in connection with this difficulty. In making anti-run back, the stitches are drawn on every alternate needle, which of course is made by tucking every alternate needle under the reverse stitch cam for one course and then put into action knitting on every needle. It would possibly be well to put a cam on the drum of the machine slightly higher than the cams now on the drum that will raise the cylinder at the point where the anti-run back is being made. If the hose made are drop stitches and not cuts, this no doubt occurs in the long butt needles.

The anti-run back should be made for one course only. Some machines have been fitted so that the anti-run back is made with two courses on the long butt needles and one course on the short butt needles. To make the anti-run back on only one course, it is necessary to put in the rear cam used for the trans-

ferring, so that it will elevate the high butt needles above the dividing cam; consequently, making the loose course but one turn of the cylinder.

CONTRIBUTOR No. 4864.

Tinting Causing Off-Shades.

Baxter discusses how to use tints and not get off-shades as a result.

EDITOR COTTON:

I notice in the October issue of COTTON that "CONTRIBUTOR No. 4844" is wondering if other full-fashioned knitters have experienced any trouble with off-shades, due to the difference in tints used to designate thread sizes.

For the contributor's information I might say that while tinting is necessary in determining thread sizes in full-fashioned hosiery manufacture, the greatest of care should be used not only by the throwster tinting the silk but also by the knitter making hosiery; otherwise off-shades will result in dyeing. Dyestuffs used for tinting are supposed to wash off during the boil-off process, but I have experienced that this is not always the case.

Some years ago I made a certain style of stocking in which I used a silk with a rather deep pink tint. After dyeing these stockings I continually complained to the dyer that all shades were too much on the red cast. The dyer made an investigation and found that after the stockings had been boiled off and were ready for dyeing, the boiled-off stockings would show a reddish color, which remained as a base, no matter what the dyer did to cover the red. We immediately took this up with our throwster and he informed us that he learned that the throwster must be very careful in the selection of dyestuff for tinting and stated that now he was having every lot of dyestuff tested before using it in the soaking bath.

This experience also taught me that I should never mix tinted silk in any style numbers but use only one color tint for each style number. If there are small lots of silk with various tints on hand that I wish to use up, I usually make a small lot of hosiery from these lots and dye them either black or some dark shade, where I know the difference in the tint will not affect the dyeing.

I have also instructed the throwster to tint all silk as light as possible. I have found that green and pink tints are the colors giving the most trouble in dyeing, and as the contributor states that these are the tints that gave him off-shades, I would suggest to him that he try to get away from these colors.

I have found that blue, tan, bronze and light violet are about the best tints that can be used and when one uses one size thread without tinting the silk, this gives one five different colors, which are about all the colors that any manufacturer will use.

I know that many manufacturers of hosiery do not give the tinting of silk much thought, and use two or more shades of tint in any one style number, but as a final suggestion to the contributor, let me say that he should use the same care in selecting tints as he does in selecting the quality of silk used, and he should also see that only one color of tint is used on any one style number. Also, get away from pink or green tints if possible; have the throwster test the dyestuff used for tinting, and I think it will be found that there will be no further trouble with off-shades in dyeing.

C. H. BAXTER.

Preventing Oil Marks and Streaks on Hosiery.

This man says proper cleaning will prevent these being caused by dirt and lint packing in the sinker ring.

EDITOR COTTON:

This is in reply to a question recently asked by "CONTRIBUTOR No. 4619" on how to prevent oil marks and streaks caused by dirt and lint packing in the sinker ring on hosiery machines.

My experience is that the sinker head must be kept clean and the sinkers free at all times. To do this it is necessary to clean the head out every day. As it is a big job to take the cap off and remove all of the sinkers, it would be necessary to spend a large part of time cleaning out machines. I do not agree with "CONTRIBUTOR No. 4767" about not using air to clean machines, if it is done properly and in the regular way. If machines are blown out every day, and the sinker head is blown out good, it will take the machine much longer to clog up and cause streaks. By doing this, everything is kept blown off, such as needle butts, and dirt, which is apt to get under the plate or in the gears, causing the machine to hang up.

If the machine is allowed to go for a month or two before cleaning out, it will cause the sizes to be away off, which means seconds or thirds. If the machine is blown out every day, this sudden change will not develop and the stitch will vary very little. I agree with "CONTRIBUTOR No. 4767" that it is bad to use the air, however, if the machine runs a month or two without being cleaned out.

I believe that most streaks are caused by oiling the cylinders before all dirt, lint, etc., have been cleaned off. By blowing these off every day, the dirt is not allowed to accumulate. A good rule is to blow all machines off good late in the afternoon and then oil early the next morning.

If it was never necessary to oil the needles, there would be very few oil marks, as few oil marks are caused by oiling sinkers. When oil is put on the butts of needles, it works up to the latch, gathering the dirt and grit from the cylinder and naturally this rubs off on the fabric as it knits. It is impossible to prevent having some oil marks if the machines are oiled regularly as they should be oiled.

Here are my ideas as to how to eliminate most of this trouble:

(1) Use air every day, blowing the machines thoroughly before oiling. Be sure to blow good where the sinker bands work. Do not use too much pressure on the sinkers and needle heads as this may bend the latches. I think about 40 pounds pressure is sufficient.

(2) Oil the sinkers good once a day, after cleaning, with a regular squirt can, using thin stainless oil.

(3) Use an atomizer or throat and head spray for oiling the needles and cylinders, putting about three or four sprays on each cylinder. Do this about twice a day.

CONTRIBUTOR No. 4891.

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The KNIT GOODS MARKETS

Trading in Hosiery Halted During Speculation of Effect of Berkshire Reduction on Markets

UNSETTLED CONDITIONS in the business of manufacturing and marketing women's silk full-fashioned hosiery are, obviously, receiving more serious consideration on the part of manufacturers as they approach the end of a year filled with trade perplexities, and wonder what may be in store at the beginning of the new year.

Until last month the industry felt the pinch of depression with little if any indication of panic. But the worst to that time was being experienced during weeks when ordinarily demand for hosiery is brisk and mills and operatives are profitably engaged, and as it was becoming more generally realized that the then state of affairs might have to terminate soon for some interests, a question often heard was, "How long can it last?"

Another question much discussed was whether the November 1st reduction of prices by the Berkshire Knitting Mills was a wise move. Vitriolic criticism of the action was hurled at the company by numbers of manufacturers representing two distinct classes. One comprised those who, having made revisions in their operating cost and reduced their hosiery prices accordingly, were able to ship out the production of 16-hour days for two shifts of operatives employed five and one-half days a week. These had been having a satisfactory volume of business and sales showed a narrow profit, comparing with losses or no profits for several months of 1930. The other class harboring a grievance against the Berkshire, but muffling their criticisms, embraced numbers of manufacturers operating small, flexible plants who, by accepting the highest offers possible for them to extract from buyers, were distributing underpriced hosiery.

Buyers made comparison with the lowest prices at which they were able to acquire hosiery, disregarding standards and closing their eyes to the fact their low-price purchases spelled distress for the sellers. It was common knowledge that reasonably meritorious stockings were being offered in October at and below the Berkshire company's prices which came out officially on November 3d. The Berkshire had not led in the downward course of prices; it followed, and in doing so, seriously disturbed the peace of mind of the two classes of manufacturers referred to. Another class not much heard of in the welter of caustic comment seemed to be accepting circumstances as they unfolded from day to day and went on "sawing wood and saying nothing".

Whether the Berkshire acted wisely in its fifth revision of the year will be less a controversial matter as adjustments to conditions in 1931 shall be made. Accurate historical treatment of events becomes more nearly possible when they are in great measure forgotten.

That the November reduction by the Berkshire Knitting Mills interrupted the business of some reasonably busy manufacturers is not a matter for dispute, if the statements of numbers of mill chiefs are accepted at their face value and, making allowance for exaggerations, due to prejudice, in their appraising of cause and effect. "Although we make a line of stockings that few manufacturers try to produce, we noted a decline in orders," said the management of a nationally-known mill selling to the better retail trade directly. "As the largest mill in the world had reduced its prices, some of our customers reasoned, it seemed probable ours would follow suit, and they held back their orders while waiting to see how matters in Reading would turn out."

"Business with us fell flat," was a common comment among operators of small to medium-size plants who usually take no part in establishing prices, simply "going along" with the market. The conclusion to be drawn from comment of this character was that buyers for department stores and large retail establishments were deferring commitments for goods for their pre-holiday selling or still were pursuing the policy of "bearing the market"—taking advantage of a situation of manufacturers' making.

All the while that some manufacturers were complaining of a letdown in their business, others, claiming no especial features for their product, were employing two shifts of operatives for a total of sixteen to twenty hours a day. They were shipping out long-day production despite the sudden drop in orders reported by some concerns. So, it might be said, in many instances the blue haze may have represented a psychology of events in the Reading, Pa., full-fashioned hosiery district.

One proposal put forth in defense of the Berkshire Knitting Mills' action was "manufacturers do not reduce prices so long as they are able to sell their product at the previous list." This doubtless would hold good as to all producers in any line.

Price declines began about one year ago. There was no allegation then of underconsumption of full-fashioned hosiery. The logical deduction is, therefore, there had been overproduction, and by January of 1930 most manufacturers knew it. Yet in that month the 295 identical establishments reporting to the Department of Commerce for January and the preceding December showed an increase of seven per cent in output of women's silk full-fashioned and ten per cent in seamless. The increase in February over January was insignificant in per cent, while, as afterward was proved, there ought to have been a decline. March marked the beginning of successive monthly drops in production.

It is apparent from a study of production statistics as supplied by the Department of Commerce that in illustrating a point, there was overproduction of full-fashioned hosiery in September, 1929. Output amounted to 1,713,476 dozens, all descriptions—cotton, silk, rayon and mixtures—as reported in statements of 344 identical mills for that month and September of 1930, when the production was reported as 1,645,761 dozens, all descriptions, a decrease of slightly less than four per cent from September, 1929. The same concerns reported stocks of full-fashioned in mills in at the end of September, 1930, of 3,897,600 dozens, which was a trifle less than four per cent at the corresponding date of 1929. From which it appears manufacturers as a body continued to overproduce in the face of conditions calling for even more severe curtailment than was practiced.

With overproduction continuing and stocks accumulating, price reductions were as certain as storm after calm. When it started will be perhaps more difficult to determine than it will be to determine where it ceased.

One year ago, it is related by some of the more important manufacturers distributing through jobbers, their plant production was sold up to late spring of 1930, and at that time they saw no need for reducing output. But, as these same manufacturers state in explanation of their error at that time, their customers did not supply shipping instructions, and the stockings that it had been expected would have been shipped out by May remained, much of them, in their stock rooms. So, in the case of some mills supplying this explanation, they continued in full production a month and more after the actual beginning of the depression in the hosiery markets.

At the time of this retrospect of a year's declines in the markets there appeared a disposition of the trade generally to wait for the final solution of problems then involving Reading specifically as the storm center of action for some sort of relief from the chaotic situation without parallel in the hosiery industry.

That the process of adjustment of various matters bearing hard upon production, distribution and consumption has not been completed appears a rational deduction. That it will be, within the course of the next six months, appears a reasonable probability. It seems no vain hope that by spring of 1931 the hosiery industry will feel the upward swing. By that time mills will have curbed production or, in any event, less full-fashioned equipment will be producing and, with present mill holdings being absorbed in the meantime, an increased margin of sales prices over actual cost should compensate for mills' lessened output.

Hosiery Trades to Emerge from Depression with Better Silk Goods at Lower Prices

OUT OF THE CONFUSION in the markets for full-fashioned hosiery due to an excess of starving stockings of silk by some manufacturers seeking an irreducible price, has come the best that ever were knitted, in the opinion of persons engaged in distribution when seamless still had a complete monopoly, and apace with improvement in construction and quality there is improvement in price—from the standpoint of the consumer who is competent to judge values.

A buyer whose experience in the hosiery department of a large department store in Philadelphia dates from 32 years ago was exhibiting a mill line of 7-thread 42-gauge cotton hem stockings for which the manufacturer is getting $6.75 a dozen, when he was led incidentally to comment that it was superior to any comparable stocking produced up to 1914, and he added, "I never have seen so good a stocking sold from stock or on order for so little money." In this case the figures mentioned were the manufacturer's asking price—and distress hosiery of like character—if there be any—is not recorded in the New York markets as having been offered for less. The mill in this instance is selling single shift capacity production.

Two chain store organizations are reliably reported paying $8.25 a dozen for a line of 42-gauge 8-strand silk and taking the production of a mill turning off around 1,200 dozens a week. This is more than department and single unit stores are willing, ordinarily, to pay for dollar stockings. The chain stores in question are maintaining a trade on price-plus-merit, and that is precisely what the manufacturer is doing. The two incidents—there are, doubtless, many of a similar character—support the proposal of better value hosiery as a side product of the depression and adjustments for recovery from it.

A chain of approximately a dozen small hosiery specialty shops has reduced its price by nickel stages in the last six months from $1.15 a pair to 95 cents, its one price in November. As once observed by the management, when asked whether a change of gauge would be necessary to avert use of less silk while revising prices downward, "we sell hosiery, not gauge" Whether the concern has its stockings made to previously prevailing specifications is a matter of no moment, since volume of sales appears to be maintained. In any event, the chain, which virtually controls the output of one mill operating over 40 full-fashioned machines, is building a mill in Philadelphia, and it is expected to be in production in January. This also is an incident in the matter of adaptation of buying and selling to changed conditions in the markets for hosiery. There are, of course, revelations of departures from fixed lines under stress of circumstances rather than voluntarily.

Toward the latter part of November the nominal owner of a six-machine full-fashioned hosiery plant near Philadelphia needed funds for buying low-price silk. He had an accumulation of around 2,000 dozens of 45-gauge hosiery made from silk costing him $2.50 above the average quotation for the first half of November, but no capital. This was his statement to several manufacturers from whom he sought advice as to what price he ought to put on the goods—he had to sell his stock of stockings to buy silk in order to run his plant. A department store acquired the lot and it went on sale at less than 80 cents a pair. This was one of quite a number of mills which had to lose to try to win and were largely instrumental in causing the rapid decline in the prices of financially strong

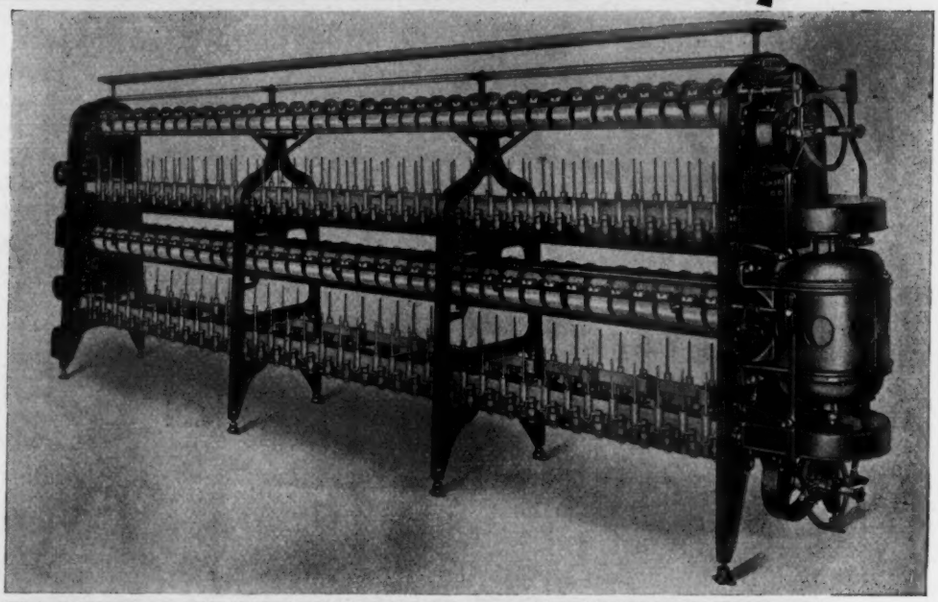
Operating Advantages that appeal to the Throwster

NEW . . . . MONARCH TWISTER

The new "Monarch" Twister, incorporating many exclusive Atwood advantages never before applied to any twister, plus numerous other modern engineering features, offers you outstanding advances in twister operation.

Descriptive literature on request.

ATWOOD



ATWOOD MACHINES of ADVANCED DESIGN

Already throwsters have shown keen interest in these two new Atwood machines. That their many advanced features provide actual OPERATING ADVANTAGES is conclusively proved by the orders received for these machines.

STONINGTON WINDER

Smoother, faster, cleaner, trouble-free winding is possible with the "Stonington" Oilless Winder. It is equipped with oilless bearings throughout and includes many features that will interest you. Descriptive bulletin on request.

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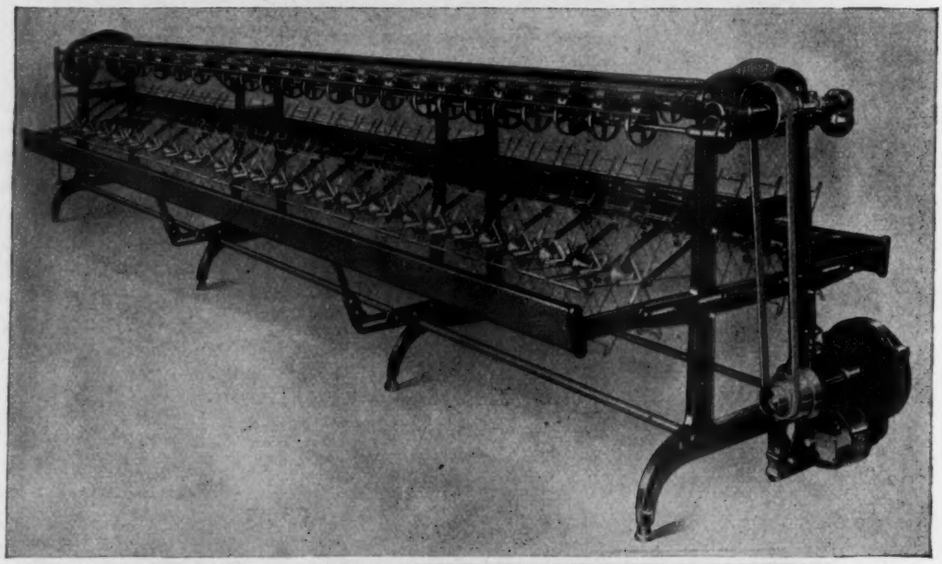

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General Sales Office: 267 FIFTH AVENUE, NEW YORK
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When buying Atwood parts from dealers, be sure to demand genuine Atwood parts—marked with the Atwood oval trademark.

5014

concerns.

A distress lot of three-strand silk 48-gauge hose with picot top was quoted $8.50 a dozen to a large retailer and turned down. The buyer offered $8, with the take-it-or-leave-it ultimatum, and the mill, to whom its salesman referred the bid, wired "take it". And there seemed, to the middle of November, there was a never-ending procession of distress lots of hosiery. About that time there was observed a halting, while "waiting for news from Reading".

A chain store in Philadelphia during the "slaughter of hosiery" displayed what was described as "first grade Grenadine " full-fashioned for 59 cents a pair An inspection by outside interests disclosed that, while the stockings might be of first grade, they were not perfects—they were irregulars of whatever grade the seller chose to class them, but represented good value at 59 cents until Strawbridge & Clothier, directly opposite, on the other side of the street, made a still more lavish display of 17,000 pairs of medium service weight, of well known brands, at 55 cents. They were stamped irregulars and also were big value, attracting one of the largest crowds of the season. A lot of 4-thread silk 48-gauge in distress for which a large retailer paid less than $9 a dozen was put up in the store's packing and ticketed $1.35 a pair. Although numbers of dealers profess to believe that dollar silk stockings will be the really highly popular numbers, they feel, judging by the foregoing incident, that it is easily possible to obtain substantial profits from higher price goods bought advantageously from some seller in distress.

Buyers for stores whose jobs depend upon the showing they make for their department are not a little upset by diminishing gross profits unless they can manage to increase their sales or further "squeeze" the manufacturer. On a given mark-up, they point out, the dollar stocking, for example, shows a less gross return than the higher priced. To get the same return in dollars and cents from a 50 per cent mark-up of goods bought for $8 a dozen to be sold for a dollar a pair, as from the same per cent of mark-up on $12-a-dozen goods sold for $1.50 a pair, for illustration, buyers point out, they would have to sell in the ratio of three pairs of dollar hose to two pairs at $1.50. "Can we make the grade?" a buyer asked, considering that to handle three pairs for every two pairs handled now would require more sales girls and more advertising, "and even then we might be showing no increase in gross return."

The buyer went further with the proposal, "suppose manufacturers' prices decline still more and our prices decline in proportion? It looks as if the department stores would have to widen the margin between cost and sales price."

There is seen the probability that not only have mill prices about reached the limit of their decline but that cheapening, by methods usually prompted by buyers for price instead of merit, can be carried little further. As has been observed by watchful distributors, there is a great plentitude of cheap silk full-fashioned stockings but a scarcity of satisfactory dollar goods. And to some students of the situation, it appears that for the moment and the very near future, the volume business will go to the producers of the better hosiery for a given arbitrary price—that competition will be in character of the merchandise rather than the price of it.

Assuming, as many well informed representatives of both production and distribution believe, that a dollar a pair is and will continue to be the top popular price, it would appear that the outlook for 42-gauge chiffons and medium service weight is most encouraging. In fact, it is stated, unofficially but by competent authority, that one important organization of considerable magnitude is planning the installation of more 42-gauge equipment, in the expectation that, with a complement of 39-gauge machines already operating, the establishment will be in a strong position to meet almost any comer in the matter of price for standard goods.

To further despoil the character of full-fashioned silk hosiery for the purpose of trying to compete on price, it has been emphasized, would be to eventually play into the hands of seamless manufacturers, who now are able to quote very attractive prices for some very attractive stockings. Users of a seamless line sold under the nationally known brand of a Tennessee manufacturer, which the mill discontinued less than a year ago, still are calling for it, and several leading stores which carried it state they now must fill in assortments of size and colors with the better seamless goods from other mills.

There have been witnessed stranger things than would be a return session for seamless hosiery. There are in place in mills, ready for action, considerable very fine gauge circular machines. It is easily conceivable that among the manufacturers who have them installed, ready for use, there is some one or more who will find a way to make them yield profits. It will have to be a way by which it will be not necessary to exact the price of full-fashioned of comparable grade as to silk fabric and construction, something that a few seamless mill owners failed to contemplate.

The Situation as to Grenadine.

While some of the better known large mills distributing their nationally advertised brands among retailers are having an increasing consumer request for grenadine hosiery, some establishments say they have been much disappointed with the results from their offerings. There have been many returns of grenadine stockings by retailers, on the ground retailers reported their customers complaining of breaks in the fabric at the point of juncture of leg and heel and in the foot. A few manufacturers say they have overcome the cause of complaint, by strengthening the fabric at the points of greatest strain and by knitting feet oversize. Some have given up entirely, since grenadine fell short of expectations in failing to establish a new line of demarcation between popular and higher price hosiery.

Grenadine is believed to find its acme of popularity in very fine gauge hosiery. According to some technical factors, it ought to be used only for three- and four-strand goods, certainly not in coarser than four-strand. With the deficiencies complained of overcome, it is believed, grenadine in four-strand

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and finer will serve to further popularize chiffon hosiery, since the twist by which grenadine of commerce is produced gives to the fabric a more lasting quality. One obstacle to its complete success as a hosiery fabric is the deception which some manufacturers practice for foisting on the public what readily passes for grenadine as contemplated in the use of the term.

It is declared by undisputed authority that at least one mill, in the North, which is licensed to use the name grenadine under the Westcott patent, is making a line of dull hosiery which is not branded as such, but is assumed by some in the trade to be, since it is commonly known the mill is permitted to knit and distribute hosiery conforming to the Westcott formula for grenadine. Then, too, there is sold considerable hosiery that really may be genuine grenadine but is not so described, and yet has a satisfactory sale for certain mills, because of presenting the dull appearance of grenadine. But hosiery of this construction from mills with a strong following among the better class of retailers seems to be in steadily increasing sale, and is reported a strong number for two or three of the more prominent manufacturers of circular knit stockings.

Mills Use More Mercerized Yarn.

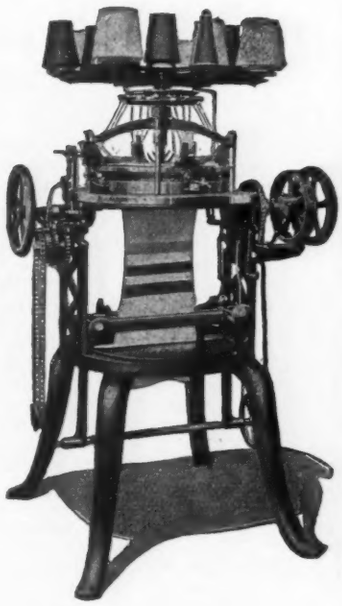
While there has been light buying of silk hosiery for deliveries to the end of 1930, a fair amount of spring business in children's lines has been placed by jobbers. Mercerized hosiery for boys and misses is reported being taken far more freely for spring than rayon. Some of the more popular price numbers are, however, of cotton in combination with rayon. Hosiery manufacturers as a body have been taking more mercerized yarn in the last month or two, according to several mercerizers, and deliveries were regarded fairly satisfactory in October-November, constituting one barometer by which there was being indicated a better outlook for juvenile hosiery and men's half-hose.

It was remarked the other day by a veteran hosieryman who was conspicuous as a supplier of low end cotton hosiery during the world war period that "we don't see any quotations on 84- and on 176-needle goods. We are still making 176s but not selling as many as we used to. The last price I saw in the newspapers for women's 176-needle carded, transfer top and looped toe, was 92½ cents a dozen. That was back in January, 1929. Cotton was around 20 cents then and spinners were asking 32 cents for yarns, 10s single cones. Now we can buy 10s for about 20 cents. I would rather not talk about prices of carded cotton hosiery."

Belated Orders for Women's Cotton Underwear Reach Mills from Jobbers for Drop Shipment

THERE OUGHT to be a service charge imposed on jobbers who hold August underwear orders back till November and then instruct us to make drop shipments in quarter to half dozen lots," commented the sales manager for one of the better known mills making women's cotton numbers in medium and heavy weights. In the latter part of October and into November manufacturers were receiving orders for

BRINTON CIRCULAR KNITTING MACHINES



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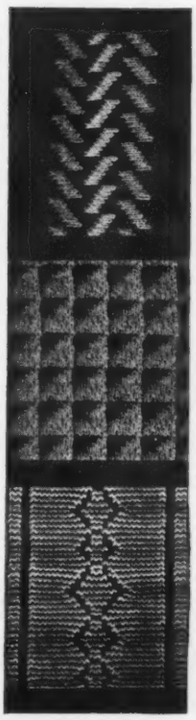

assure the success of your merchandise by making them on Brinton's. They will perform up to your expectations if Brinton's knit them.

Brinton Knitting Machines are the biggest backing that you can give your sales force — the biggest help to your jobbers and retailers — the biggest value to the ultimate consumer.

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About 50 converters enjoy the lion's share of the market for yarn dyed cotton and rayon woven fabrics.

FRANKLIN Process Colors are nationally advertised to the retail, wholesale, cutting and converting trades. They are the only colors used in yarn dyed fabrics which are so advertised. In advertising Franklin Process Colors we have set for ourselves a high standard of quality and service. We know that we must closely approach this standard if our advertising (and therefore our business) is to be permanently successful.

These facts are recognized by many converters. That is why they specify or gladly accept Franklin Process Colors when sending inquiries or placing orders. They want Franklin Process Colors because these colors represent known quality and known responsibility.

It will, we believe, best pay users of colored yarns in the long run to keep the confidence of their customers by giving them what they want. Substitutes may or may not be "just as good." It really doesn't matter, because when all is said and done, they are substitutes. They are not what the customers specified.

The thing that does matter in the long run is a reputation for integrity and for knowing and supplying the demands of the trade.

THESE converters specify FRANKLIN PROCESS colors in their orders and do business with mills that have expressed a willingness to run Franklin Process Colors when specified.

Are you one of these mills?

Are you getting your share of the lion's share?

If you already run colored cotton yarns and are not already among the mills described above, let us acquaint you with an extremely simple plan whereby you can become one of a favored group.

Just use the coupon to ask for information. Your request will not obligate you.

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☐ We are already running colored yarns.

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Adv. 377

Fast Color Identity is Now the Master Salesman

women's medium weight undergarments of cotton and of cotton and wool in mixture. While these orders gave a draggy fall season an aspect of some activity, they were regarded by manufacturers as in the light simply of a light shower after a protracted drought. While every shipment represented just that much less underwear for mills to carry, their aggregate did not contribute a dozen garments to the season's business —as by October every case ought to have reached jobbers and mills should have been engaged on orders for light weights for spring deliveries.

A sprinkling of spring business in women's cottons has since been written it is stated by spokesmen for several important mills. Relatively, the orders represent a greater volume than that for men's exclusively cotton light weights, in the opinion of some wholesale distributors of both.

In the belief of some primary market interests, the bulk of the initial business in men's light weights will be written about the time the opening of men's heavy cotton ribs gets under way. There is heard the same complaint as to drop shipments and pickayune orders in this group as that voiced in relation to women's cottons, which this year probably had their more severe test in competition with rayon underthings.

The reduction in prices for rayon yarns followed at once in the prices for finished rayon commodities, notably underwear, of which there has been a surplus production these last several years. So, when the rayon producers began their slaughter of prices, there was a sudden and general unloading of rayon underwear, which many of the large retail stores are using as a leader to almost as great extent as all used distress silk hosiery. But raw silk price declines had preceded those for rayon, and latterly, between flimsy underwear and lingerie made from silk at the lowest prices ever, and skimped garments of rayon yarn at also record low prices, cotton underwear for women has had to meet the severest rivalry since the dawn of the day for artificial fibers. It seems to have suffered a setback, in reported mild degree, but from reports of upstate Pennsylvania manufacturers as to deliveries of medium weights and the character of the orders for spring, demand next year is expected to about equal that of 1930.

Hazy as to Heavy Weight Opening.

The status of fall business in men's heavy weight cotton ribs can only be conjectured. During only one or two short periods of low temperatures was there a semblance of a spurt in deliveries, say manufacturers, and except for these somewhat brighter spots there has been no climatic help for the underwear trade this season.

Manufacturers now can estimate pretty closely their decline in shipments from recent years, but are disinclined to refer to them. It is admitted in mill circles that no longer can jobbers be berated for holding commitments down to deliveries to their trade, and that they hardly could be expected to be placing much business in heavies at this late day.

It was the opinion of one of the larger wholesale distributors in New York after publication of the November 8 cotton crop estimate of the Federal authori-

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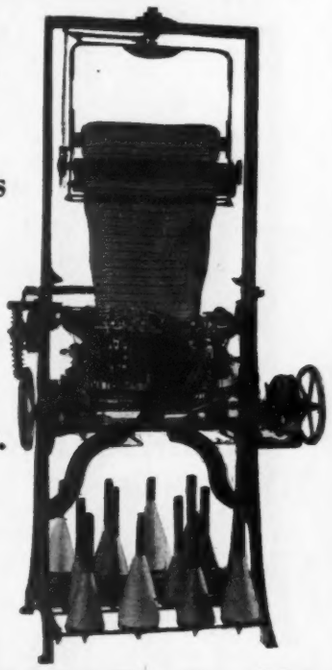
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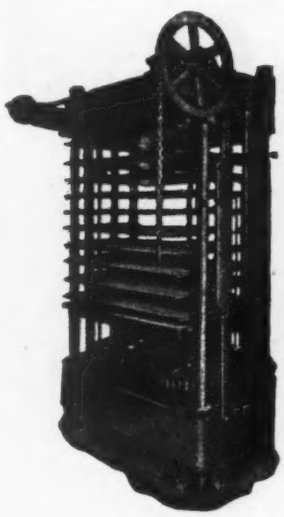
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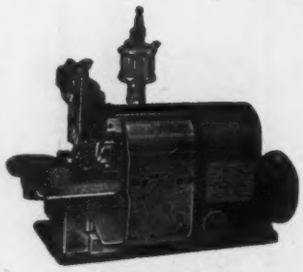

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For simultaneously trimming and joining ends of cotton, silk or woolen piece goods with a

FLAT BUTTED SEAM

Permits goods to pass through finishing machines, uninterrupted, for such operations as Shearing, Calendering, Mercerizing, Bleaching, Dyeing and Printing—with *remarkable saving*—both in labor and fabric.

Butted Seam, natural size, made by STYLE 60 ABB MACHINE on Cotton Goods which have been subsequently processed. The STYLE 60 D3B makes a similar though much wider seam designed for use on sleazy or loosely woven goods to insure holding.

OTHER RECENT DEVELOPMENTS—FOR THE RAYON TRADE

STYLE 60 RD —For a three-thread overedge finish, either straight or scalloped, on Rayon Bedspreads and other sleazy articles on which the ordinary edge finish will not hold.

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Let Us Demonstrate the Work of These and Other Machines on Your Own Fabric.

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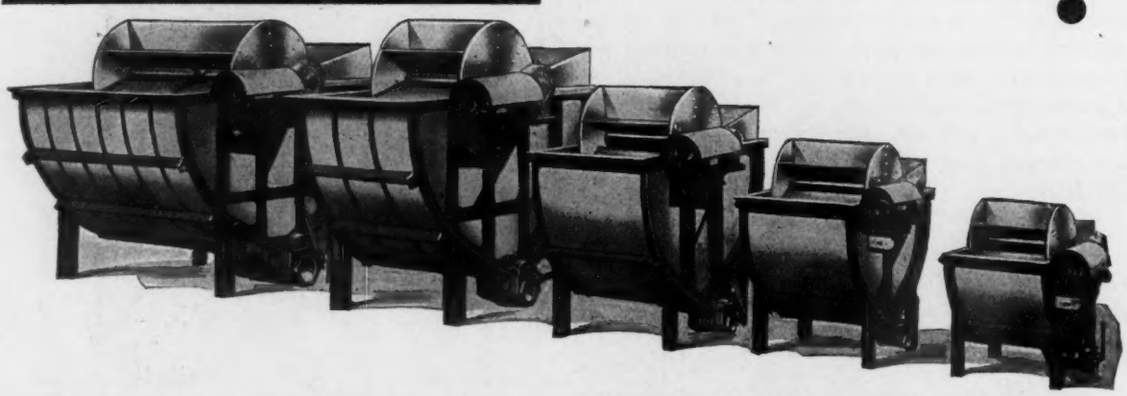

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These frames are made extra heavy and rigid to reduce vibration. Motor, belt or chain drive at your option. Capacities 5, 10, 25, 50 and 100 lb. sizes. Other sizes built to order.

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Chattanooga, Tennessee

ties that distribution of men's cotton underwear in 1930 would be the lightest for any year for which statistics are available, this embracing the various seasonal weights in cotton in all classes. The prediction was based upon a general knowledge of the primary market business in New York and successive monthly reports of mills to the Department of Commerce as to production, shipments and stocks in mills the mill holdings gaining and unfilled orders declining. In the circumstance, little is heard of plans for the opening of heavy weights for fall of 1931. Some factors seem to believe there will be less formality attaching to the next opening; that season is playing a less part in these affairs, and that mills will, mostly, offer their lines when the spirit moves them.

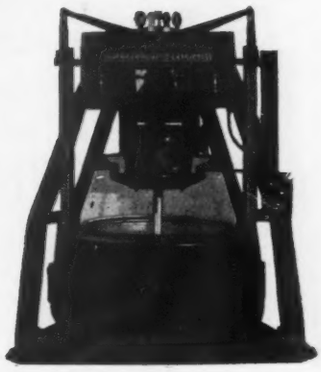
Little of a definite character as to plans for 1931 will be heard this year, according to gossip in the trade. Buyers are being consulted, as usual, say manufacturers, but those who may favor an opening in January will be expected to give some indication of when they would be ready to supply order details, in the opinion of several who ordinarily participate in conferences preliminary to the commencement of a season's campaign.

Women's Worsted Sweaters in Spring Weights Reported Receiving Attention of Jobbers

THE KNITTED OUTERWEAR business is expected by the more important manufacturers to make a better start for 1931 than a finish for 1930. Manufacturers of sweaters may reasonably look for some little trading in the event of severe weather, but otherwise their 1930 season is virtually ended—and the shipments for the year have been far short of average, going back over a period of years. Business in some sections was affected by the summer drought, and later, in practically all sections, by the combination of mild weather and circumstances incident to business depression.

As probably every element of mankind interested in the production and marketing of sweaters has been for more than a half year passing the buck—which at the end of the season is in the involuntary keeping of the producers of raw materials—there are virtually no stocks of sweaters. Dealers may later view this as unfortunate for themselves. In any event, the start of manufacturers with light sweaters for 1931 is made with decks cleared for action. Prices are favorable to distributors, being lower than last year, even zephyr goods being offered at less than the rates for lines of not as high quality a year ago. High class novelty lines from a half dozen or more mills which had their first formal showing on the road about the middle of last month have met with a most encouraging response from some of the more important jobbers, it is shown in the orders for samples for road salesmen touring retailers in January.

There is seen definite indication of a drift to lighter weights in sweaters, and as this trend developed this year, it is believed to supply the explanation for the relatively light business in shaker knit coats, of which some manufacturers are reported having cumbersome holdings, shakers being an exception in the



. . . with a basket as smooth as silk!

FOR extracting fine goods, the Humatic Hydro Extractor is furnished with a "silk finished" basket, as smooth as the finest silk. No roughening or pulling of fibres in hosiery, skeins or piece goods. This is but one of the many refinements found only in the Humatic. Write for details.

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The prevailing style calls for Crepe Twist Yarn—which Quissett can furnish made from either spun rayon or cotton fibre, in any twist desired, and put up in any shape.

The recognition and acceptance of Quitex Crepe Twist Yarn and Quitex Spun Rayon is due not only to their smartness, dull lustre and high tensile strength, but also to the industry's faith in Quissett's experience of twenty years' duration.

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New Bedford, Mass.

Wm. M. Butler, Pres.
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matter of mills' light stocks. Besides, the shaker is a cold weather garment, and at that has had to compete with the lumberjack, which this year has again been in evidence.

Quite a few manufacturers of women's sweaters are successfully engaged in the production of knitted suits for women—skirt, sweater and jacket. Those whose plants appear to be the busier in this line are giving first attention to only high class garments. Joseph Saftlass as president of the Philadelphia Sweater Mills entered the high grade ensemble field less than two years ago, and recently removed to the large building of the Powell Knitting Co., which the Powell Co. has vacated except as to perhaps one floor, since removing its main plant several years ago to Spartanburg, S. C.

Among the Knitting Mills

ACHER HOSIERY MILLS, Columbus, Ga., are entering the full-fashioned field. They are to install six full-fashioned machines in the beginning and will expand later. Lockwood Greene, Engineers, Inc., are the engineers in charge. The company is now on seamless production, with 180 knitting machines.

Pauline Hosiery Mills, Little Rock, Ark., will move their plant to Evansville, Ind., according to recent announcement. The Evansville Chamber of Commerce will provide financial backing for expansion. Plant equipment will be increased from 25 to 50 machines.

Elder Hosiery Co., Burlington, N. C., recently organized by Clifton Elder and associates, is now operating with 12 full-fashioned hosiery machines. They state that 30 seamless machines are being installed.

A. W. Niemeyer & Co., Burlington, N. C., are completing the installation of three full-fashioned hosiery machines and have ordered four more for immediate installation.

Byrum Hosiery Mills, High Point, N. C., have been granted charter to carry on general manufacturing business with capital stock of $125,000, with $4,000 subscribed by G. O. Kester, O. F. Kester, J. E. Kester, and A. E. Byrum.

The mills of the Pacolet Knitting Co., Lynn, N. C., are having a remodeled heating plant installed and will be in operation immediately. This concern succeeds the Wear Knitting Co.

Davenport Hosiery Mills, Chattanooga, Tenn., now manufacture only full-fashioned hosiery, having discontinued the manufacture of circular knit some time ago.

Pikeville Hosiery Mills, Pikeville, Tenn., are now operating on a full time schedule. In the near future, they will install finishing machinery, it is reported.

The new brick and steel building of the Hollar Hosiery Mills, Hickory, N. C., is nearly completed, and the company expects to move in right away. They have 180 knitting machines on men's cotton and mercerized hosiery.

The new $30,000 addition to Pilot Full Fashioned Hosiery Mill, Valdese, N. C., has been completed. New throwing machinery, including twisters, winders and coners will be installed. This plant operates 30 knitting machines for the manufacture of full-fashioned hosiery. It is stated that 4,000 pounds of silk will be used each week when machinery is installed.

Star Hosiery Mills, Star, N. C., were recently organized and began operations with 25 Scott & Williams knitting machines and nine loopers. Dyeing and finishing equipment has also been installed. B. B. Hogan was recently appointed secretary and treasurer and C. F. Cline plant superintendent.

Stimpson Hosiery Mills, Inc., Statesville, N. C., have begun operations with eight leggers and two footers, 42-gauge Reading machines, 20 section leggers and 28 section footers.

Sweetwater Hosiery Mills, Sweetwater, Tenn., manufacturers of men's plain and fancy hose, are operating 185 knitting machines at full capacity.

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The YARN MARKET

Philadelphia, Pa., November 15th, 1930.

IT WILL BE RECALLED that conditions in the yarn market last month were somewhat better than they had been for the past few months. Of course the improvement was not of such a nature as to cause any to start making predictions as to what future activity would be, but, as pointed out by many, any sign of improvement at this time is certainly welcomed.

The slight upward trend was still noticeable during the first week of the present report period, the week of October 20th. There was a considerable increase in demand for cotton yarns. It was believed that most consumers were carrying unusually light stocks, for in most cases buyers specified that delivery be immediate. There were no exceptionally large orders booked, but the increase in number of sales was sufficient to warrant quite an increase in total sales.

It was also pointed out that distributors, themselves, were carrying only sufficient yarn in the local market or nearby to permit them to give spot shipment of such yarns as customers desired immediately. It was asserted that there were no speculative stocks of yarn owned in the market at this time.

During the next week the first general rise that carded yarn rates had experienced since early September was made. Most spinners made a strong response to a slight upturn in cotton quotations, so a large number of distributors advanced their rates half-a-cent a pound. They advanced some numbers that had been depressed for some time as much as a cent a pound.

Several spinners at this time were replying to inquiries by stating that they were open only for limited additional orders at existing rates, having already booked up most of their production over the next six or eight weeks. The majority of sale yarn mills wanted business, but they would not listen to inquiries based on buyer's offers.

Spinners were taking such a firm stand in regard to their increase of prices that distributors started adjusting their rates accordingly. Most sellers readily admitted that demand had increased rather substantially, but the majority of these feared that it was only a spurt.

During the next week spinners and distributors encountered a great deal of resistance due to the increase in yarn rates of the previous week. This was especially true of combed yarns. As a result of this resistance, single combed yarns were reduced about a half cent a pound.

Carded yarns, however, were much firmer More carded yarn spinners were reported as turning down or ignoring inquiries sent to them involving acceptance of orders at prevailing prices for delivery at some future date than had been the case for some time. The fact that buyers at this time were voluntarily putting themselves on record with the dealers as being willing to purchase enough yarn to cover them through to the end of the year caused most spinners to feel that the bottom had been passed.

The next week saw the end of the fall buying movement, and along with it the firm stand that yarn rates had experienced for the past few weeks. A large number of spinners who last week gave the impression that they were booked up with orders as far as they cared to go at the prevailing prices, were at this time clamoring for business and admitting their willingness to make concessions. Fluctuations in cotton quotations were attributed as the main cause of the disturbance.

Philadelphia prices on November 15th follow:

Single Skeins.

4s to 8s	19½	10s	20
12s	20½	14s	21
16s	21½	20s	22 @22½
24s	24½ @25	26s	25 @25½
30s	26½ @27		

Single Warps

10s	20 @20½	12s	20½ @21
14s	21 @21½	16s	21½ @22
20s	22½ @23	26s	25½ @26
30s	27 @27½		

Two-Ply Warps

10s	21½	12s	22
14s	22½	16s	23
20s	23 @23½	24s	25 @25½
26s	26 @26½	30s	27½ @28

Two-Ply Skeins

8s	20	10s	20½
12s	21	14s	21½
16s	22	20s	22½ @23
24s	25	26s	26
30s	27½	40s	35

Frame Spun Carded Yarn on Cones

8s	20	10s	20
12s	20 @21	14s	21 @21½
16s	21½	18s	22
20s	22½ @23	22s	23½ @24
24s	24½ @25	26s	25½ @26
30s	27 @27½	40s	36
30s dbl. carded	30 @30½	30s tying in	26 @26½

Mercerized Yarns

Single		Two-Ply	
30s	65	20s	51
36s	67	26s	52½
40s	70	30s	54
45s	73	36s	57
50s	76	40s	60
60s	85	50s	64
70s	1.00	60s	72
80s	1.12	70s	84
90s	1.50	80s	96
100s	1.80	90s	1.31
		100s	1.61

Mule Spun Carded Yarn on Cones		Mule Spun Combed Peeler Yarn on Cones	
10s	25½	10s	34
12s	26	12s	35
14s	26½	14s	36
16s	27	16s	37
18s	27½	18s	38
20s	28	20s	40
24s	30½	26s	42
26s	31½	30s	44
30s	32½	36s	47
40s	40	40s	50